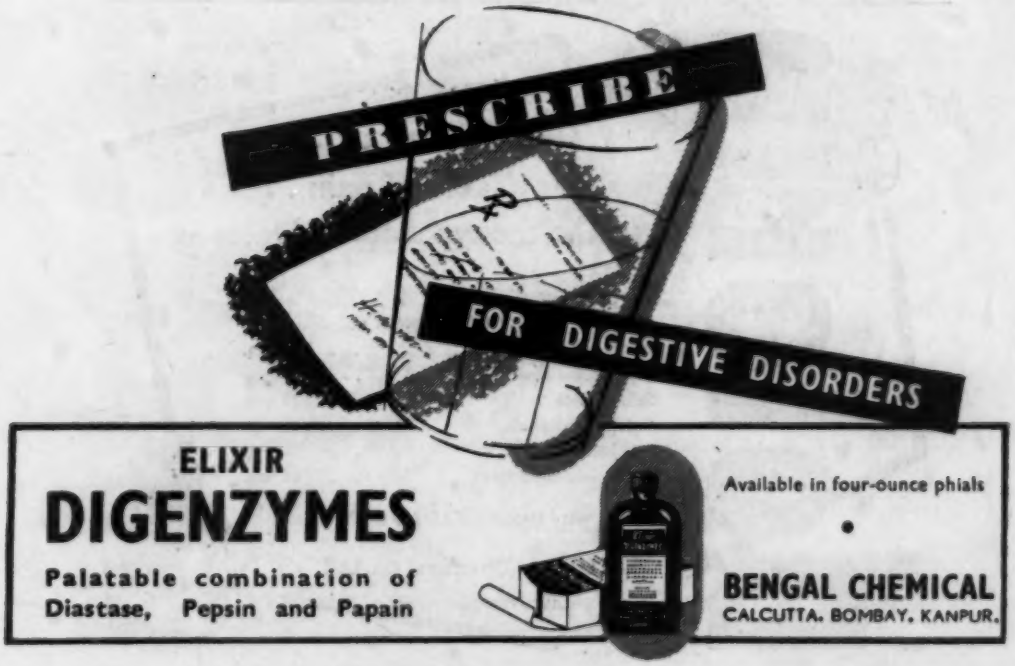
JOURNAL
of the
INDIAN MEDICAL ASSOCIATION

VOLUME 36 NUMBER 4 CALCUTTA FEBRUARY 16, 1961

Published twice a month. Annual Subscription: Inland Rs. 24/-; Foreign Rs. 30/-; Single copy: Inland Re. 1/-; Foreign Rs. 1.25



VITAMINS WITH FLAVOUR OF ORANGE
AND TASTE OF HONEY

PANLYN

Each teaspoonful (5 c.c.) contains :

Vitamin A	...	5000 I.U.
Vitamin D	...	500 I.U.
Vitamin C	...	75 mg.
Vitamin B_1	...	3 mg.
Vitamin B_2	...	3 mg.
Vitamin B_6	...	1.5 mg.
Nicotinamide	...	30 mg.
Methionine	...	5 mg.

Supplied in 60 c.c. and 120 c.c. bottles

THE CALCUTTA CHEMICAL
CO., LTD., CALCUTTA-29

HINDPUB 50

Dolorin

For many faces of pain . .
use the many facets of Dolorin

Each tablet contains :

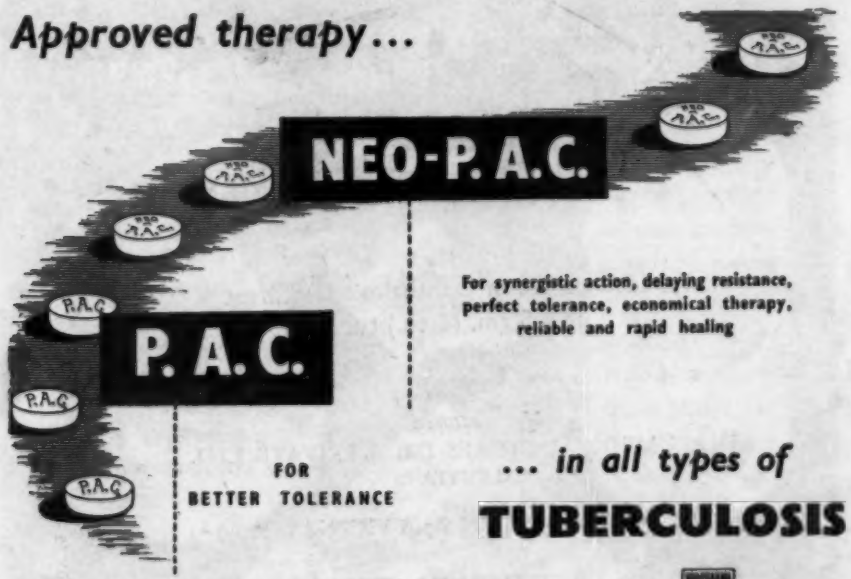
Acetyl Salicylic Acid	. .	300 mg.
Acetophenetidin	. .	195 mg.
Salicylamide	. .	25 mg.
Codeine Phosphate	. .	5 mg.
Caffeine Citrate	. .	10 mg.
Aluminium Glycinate	. .	65 mg.

Supplied in phials of 15, 100 & 300 tablets.

The Calcutta Chemical Co., Ltd.
CALCUTTA-29

TABLE OF CONTENTS

	Page
ORIGINAL ARTICLES:	
1. Clinical and Therapeutic Evaluation of Chlorothiazide in Oedema—Hardeo Narayan Singh	133
2. Rudanti in Pulmonary Tuberculosis—R. N. Tandon, B. K. Khanna, R. P. Bajpai and S. H. Zaidi	143
3. Skeletal Tuberculosis Asociated with Pulmonary Tuberculosis: A Review of 24 Cases—D. K. Sen	146
4. A Short-Term Clinical Trial with A Combination of INH and PAS in the Treatment of Tuberculosis in Infants and Children—K. J. Vyas	149
PRACTITIONERS' SERIES:	
Vertigo—G. Narsing Rao	152
EDITORIAL:	
Isoniazid and PAS Compound	156
GENERAL PRACTICE DIGEST	158
CURRENT MEDICAL LITERATURE	159
CURRENT TOPIC:	
Malnutrition and Food Habits	161
NOTES AND NEWS	163
CORRESPONDENCE	166
REVIEWS	168
OBITUARIES	169
SUPPLEMENT:	
1. XXXVII All-India Medical Conference, Calcutta	171
2. VII Bombay Territorial Conference, 1960, Bombay	172
3. Branch Notes	180



Enteromycetin

CHLORAMPHENICOL—U.S.P.

Supply
1% Enteromycetin Ophthalmic Ointment
in 3·5 gm. ($\frac{1}{8}$ oz.) tube

Dey's

Manufactured by
DEY'S MEDICAL STORES (Mfg.) PRIVATE LTD.
CALCUTTA-19

Under licence from: ZAMBON S.p.A VICENZA (Italy)

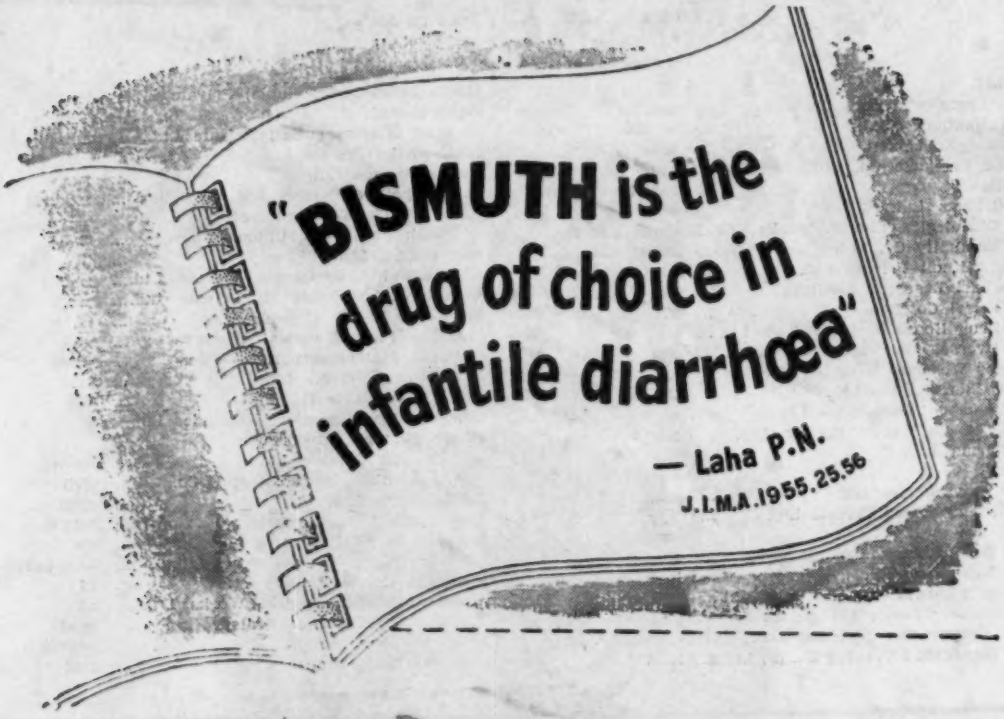
Exclusive Distributors. DEY'S MEDICAL STORES PRIVATE LTD.
CALCUTTA - BOMBAY - DELHI - MADRAS - PATNA - GAUHATI - CUTTACK

ENT/DM/2

Index to Advertisers

	Page
Adeco Ltd.	xliv
Alembic Chemical Works Co. Ltd.	xxx
Allen & Hanburys Ltd.	v, xix
Amarchand Sobachand	xliii
American Products Co. Ltd.	xiii
Antiseptic	xxxvi
Aspro-Nicholas Ltd.	xxiii
Bengal Chemical & Pharm. Works Ltd	Front Cover
Bengal Immunity Co. Ltd.	Back Cover
Boehringer-Knoll Private Ltd.	xi
Brahmachari Research Institute	xii
British Felsol Co. Ltd.	vi
British Drug House (India) Private Ltd	xx
British Overseas Airways Corporation	xiii
Burroughs Wellcome & Co. (I) Pvt. Ltd.	xii
Calcutta Chemical Co. Ltd.	2nd Cover
Chemo-Pharma Laboratories Ltd.	xii
Chowgule & Co. (Hind) Private Ltd.	xxxvi
Ciba Pharma Ltd.	xxiv
Cipla Ltd.	xxxiv
Crookes Laboratories Ltd.	xxxviii
Dey's Medical Stores Private Ltd.	ii, xiv
Dollar & Co.	xxxii
Emedia Export Co. m.b.H.	xxviii
Eastern Drug Co. Ltd.	iv
East India Pharmaceutical Works Ltd	xxvi
Franco Indian Pharm. Private Ltd.	vii, xxv
Fairdeal Corporation (Private) Ltd.	3rd Cover
German Remedies & Trading Co. (P) Ltd.	xxxi
Glaxo Laboratories (India) Private Ltd.	xvi
Horlicks Ltd.	xlii
Hoechst Pharmaceutical Private Ltd.	xxix
I.C.I. (India) Private Ltd.	xxi
Indian Oxygen Ltd.	xxxv
John Wyeth & Brother Ltd.	xxxiii
Kaira District Co-operative Milk Producers' Union Ltd.	xxii
Kemp & Co. Ltd.	iii
Khandelwal Laboratories Private Ltd.	xxxvii
Lederle Laboratories (I) Private Ltd.	xxxii
Martin & Harris (Private) Ltd.	ix, x
Mendine Pharmaceutical Works	xiiii
National Instruments Ltd.	xliv
Neo-Pharma Private Ltd.	i
Nestle's Products (India) Ltd.	viii
Oriental Pharmaceutical Industries Ltd	vi
Pfizer Eastern Corporation (Dumex Private Ltd.)	xxvii
Pharmaceutical Manufacturing Co.	xvii
Philips India Ltd.	xviii
Phytosynth Laboratories	xiiii
Rallis India Ltd.	xv
Raptakos, Brett & Co. Private Ltd.	3rd Cover
Sarabhai Merck Private Ltd.	xi
Standard Pharmaceutical Works Ltd.	xi
Therapeutic Pharmaceuticals	xxxix
Unichem Laboratories	xxxviii
Universal Drug House	xiiii

KEMVITAL
for
nutritional
therapy
KEMIVIT
a balanced aqueous multi-vitamin supplementation in a highly palatable SORBITOL base for ready acceptance, better absorption and high stability.
vitamin mineral capsules containing 11 essential vitamins and 10 important minerals to meet constant need of body tissues.
Kemp & Co Ltd
"Elphin House"
Old Prabhadevi Road, Bombay 28.



Bismuth in every age has occupied a prominent place in the treatment of dyspepsia, diarrhœa and allied gastrointestinal complications. Laha has reaffirmed the great value of that metal in his illuminating article on infantile diarrhœa (*J.I.M.A.* 1955. 25. 56). It is available in combination with digestive enzymes in Bismozyme.

BISMOZYME
The gastrointestinal regulariser

EASTERN DRUG CO. LTD. Eastern Drug
CALCUTTA-27

Round the clock *relief*—in

PIRITON

- ✳ gives rapid and lasting symptomatic relief
- ✳ is effective in a dosage one tenth to one fiftieth of that of most other antihistamines
- ✳ rapidly relieves pruritus
- ✳ is notably free from side effects
- ✳ can be given with safety to children
- ✳ is available in a complete range of dosage forms

For initial, supplementary or routine therapy

PIRITON A & H TABLETS

Each tablet contains 4 mg. Piriton A & H (chlorpheniramine maleate B.P.C.) Bottles of 25 and 500 tablets.

For sustained relief

PIRITON A & H DUOLETS

Each Duolet contains 8 mg. Piriton A & H (chlorpheniramine maleate B.P.C.) 4 mg. in the outer shell for immediate action and 4 mg. in the specially-coated inner-core, for delayed action. Bottles of 25 Duolets.

For emergencies

PIRITON A & H INJECTION

Contains 10 mg. Piriton A & H (chlorpheniramine maleate B.P.C.) in 1 c.c. Boxes of 5 and 100 ampoules of 1 c.c.

LITERATURE ON APPLICATION

Manufactured in India by
ALLEN & HANBURYS LTD BOMBAY 1
(Incorporated in England: Limited Liability)

P60/IND

"I always prescribe Felsol— its action is so sure and swift."

The preparation of choice in the treatment of

ASTHMA

Felsol's worldwide use and reputation rests securely on its immediate, safe and prolonged relief of bronchospasm—the chief factor in asthma, whatever the cause. Narcotic-free and easily administered, its complete effectiveness breaks the vicious circle of anxiety and apprehension, and strengthens resistance against recurring attacks. Doctors favour Felsol because it inspires the self confidence so essential to improvement in this difficult and distressing condition.

Clinical samples and literature on request

Clinical sample and literature on request

THE ANGLO-FRENCH DRUG COMPANY (ESTN.) LTD.
24-26, TARDEO ROAD, BOMBAY, 7.

BRITISH FELSOL COMPANY LTD.,
206/212 ST. JOHN STREET, LONDON, E.C.1

OPII

B COMPLEX

FORTE WITH B XII

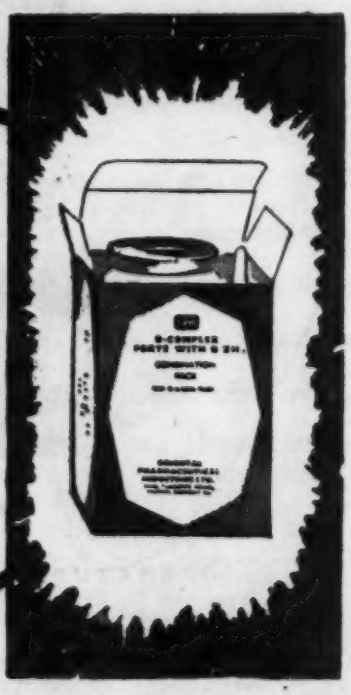
COMBINATION PACK

Each ml. of the mixed solution Contains:

*Vitamin B_{12} B.P.	75 mcg.	Choline Chloride	25 mg.
Vitamin B_1 B.P.	100 mg.	Methionine N.F.	5 mg.
Riboflavine B.P.	3 mg.	Inositol N.F.	3 mg.
Vitamin B_6 B.P.C.	5 mg.	Benzyl Alcohol B.P.	3 %
Nicotinamide B.P.	0.15 G.	Phenol B.P. (as preservative)	0.5 %
Panthenol	5 mg.		

*after reconstitution

ORIENTAL PHARMACEUTICAL INDUSTRIES LTD.
Mahim, Bombay 16



ROUSSEL

A prop for old age

GERONYL

Sex hormones
Vitamins
A psycho-tonic amine
An amino-acid
A. T. P.

Vials of 30 tablets, each containing :

Adenosine triphosphate	2.5 mg.
Methyl-androstanolone	1 mg.
Methyl-testosterone	1 mg.
Ethinyl oestradiol	0.003 mg.
Vitamin B1	2.5 mg.
Vitamin B12	0.02 mg.
Glutamic acid	50 mg.
Methamphetamine hydrochloride	1 mg.

ROUSSEL

LES LABORATOIRES ROUSSEL
Laboratoires Francais de Chimiotherapie
35, Boulevard des Invalides, PARIS 7e.

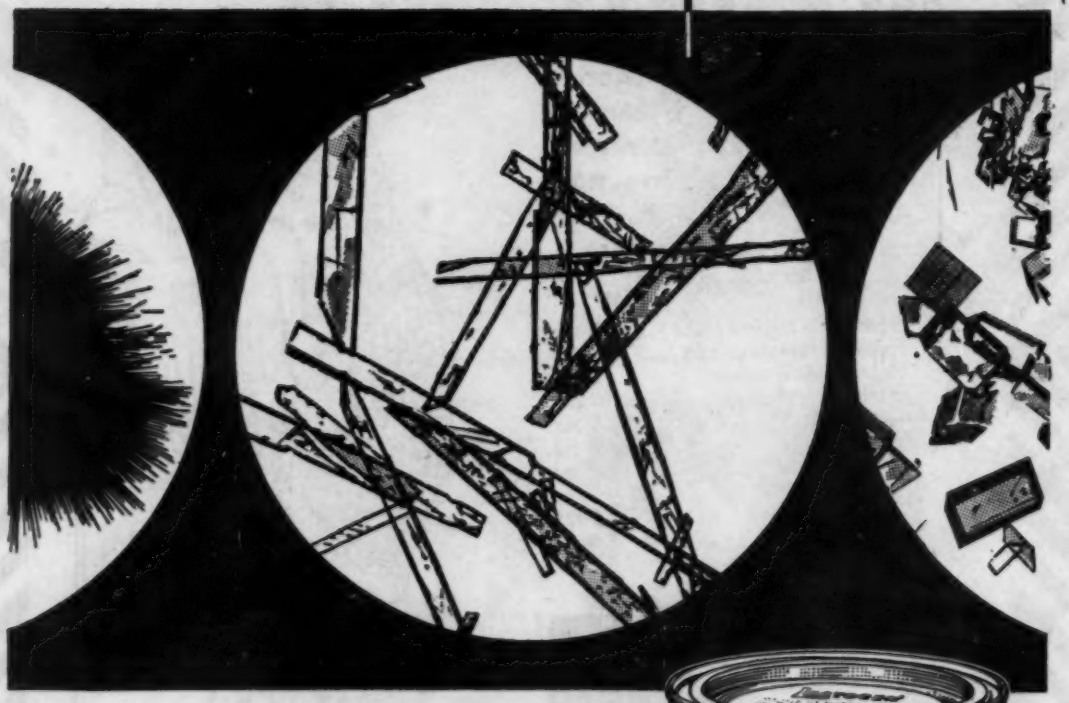
Particulars and supplies from :
FRANCO-INDIAN
PHARMACEUTICALS PVT. LTD.
Bapnu Ghar, Hornby Vellard, BOMBAY 18.

ROUSSEL

Seven NEW reasons...

NOW 1 oz. of Lactogen powder contains

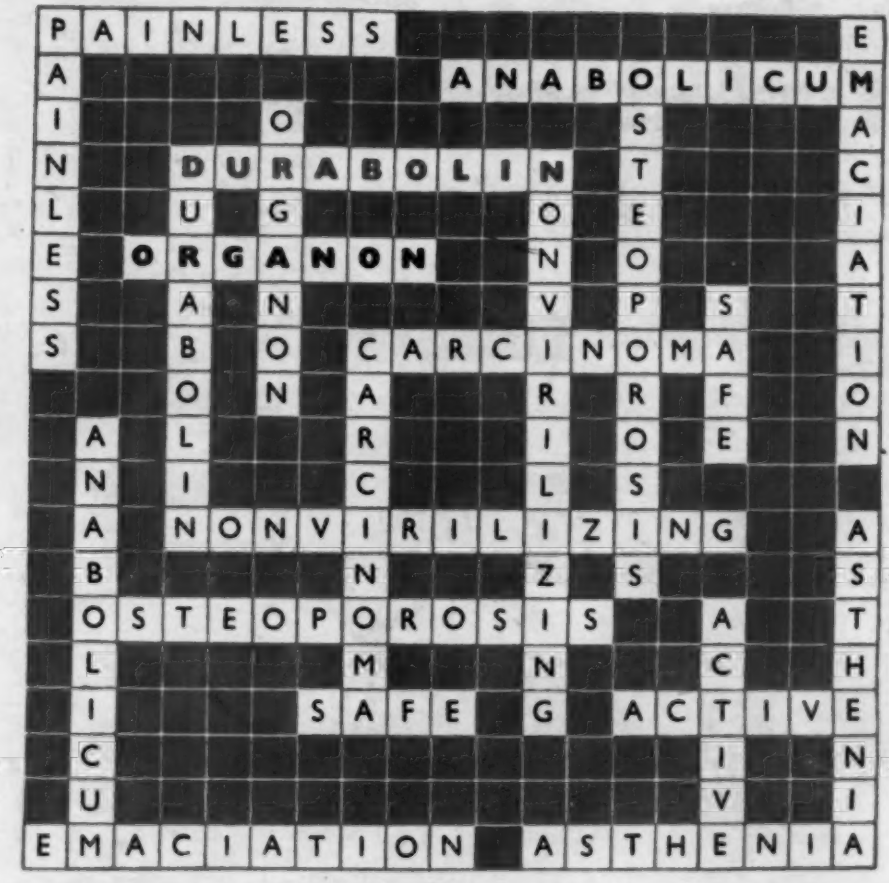
Vitamin	Quantities
A	.425 i.u
B_1	.0.11 mg
B_2	.0.14 mg
PP (Nicotinamide)	1.70 mg
B_6	.0.28 mg
calcium pantothenate	0.85 mg
B_{12}	.0.57 mcg
C	.8.51 mg
D	.113 i.u
and IRON	1.50 mg



...why LACTOGEN should be your first choice when recommending an infant feeding formula

You already know this fine and reliable infant food. Now we have pleasure in announcing that, in addition to Vitamins **A, D** and **IRON**, Lactogen has also been fortified with seven more vitamins.

12/9/51



THE SOLUTION IS

DURABOLIN

(19-nor-androstenolone phenpropionate or nandrolone phenyl propionate)

the most powerful tissue-builder

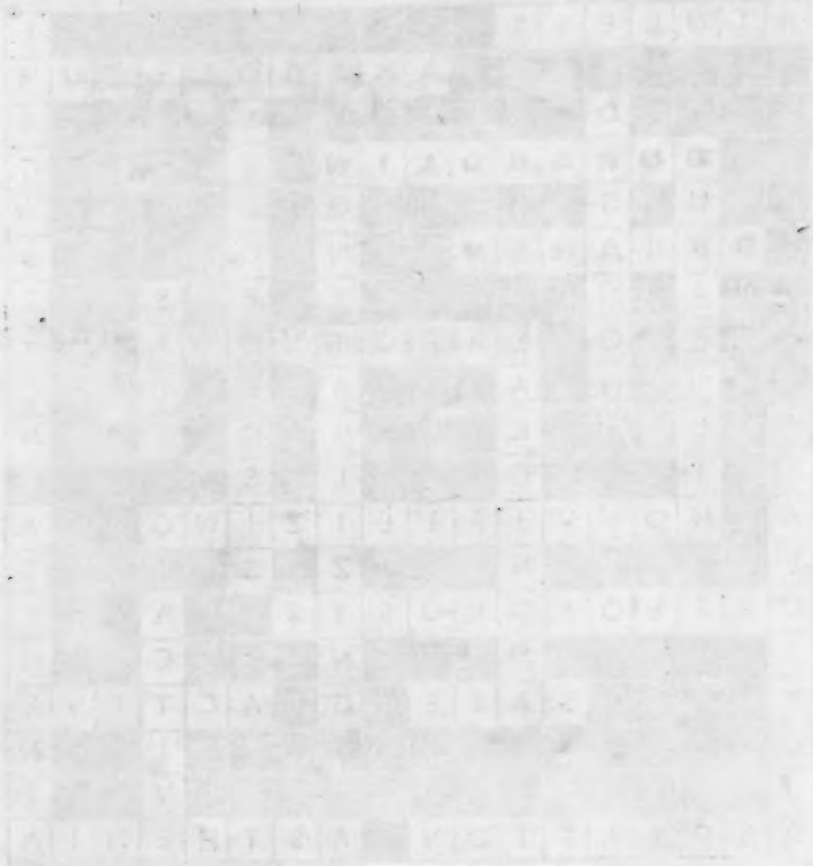
One 25 mg. injection weekly

Write for full literature

OL/P/2/MH

Distributed in India by
MARTIN & HARRIS (PRIVATE) LIMITED
P.O. Box 665, Calcutta-1.
BOMBAY · MADRAS · NEW DELHI

Branches :
AHMEDABAD · BANGALORE · CHANDIGARH · COCHIN
CUTTACK · GAUHATI · INDORE · JAIPUR · JAMMU
KANPUR · PATNA · VIJAYAWADA.



presenting

Dispeptal*

100 years boehringer

the **modern** enzyme dragée

triple standardisation

triple protection

triple effect

for all digestive disorders

Manufactured by

BOEHRINGER-KNOLL PRIVATE LIMITED

UNITED INDIA BUILDING, P. MEHTA ROAD, BOMBAY 1

Sole Distributors:

RALLIS INDIA LTD., Pharmaceutical Division, Post Box No. 229, Bombay-1

* T. M. Regd.

Striking the right

NOTE

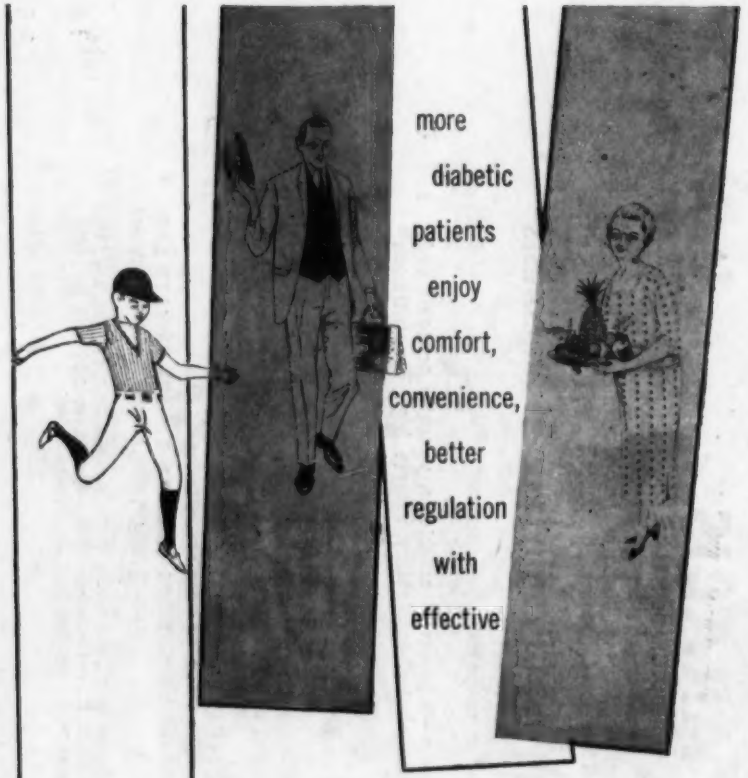
'ACTIDIL', most potent of the antihistamines, strikes the right note in the treatment of allergies. It is exceptionally strong—yet safe for all ages. Two or three daily doses of 'Actidil' Tablets or 'Actidil' Elixir will restore most patients to harmony with nature.

'ACTIDIL'—*in allergies*

TRIPROLIDINE HYDROCHLORIDE

Packings:
Elixir (1 mg. per 3.5 ml.) containers of 28 ml. and 114 ml.
Tablets (scored) of 2.5 mg. containers of 10, 25 and 100.

BURROUGHS WELLCOME & CO. (INDIA) PRIVATE LIMITED
P. O. Box No. 290, Bombay



more diabetic patients enjoy comfort, convenience, better regulation with effective

DBI

the only "full-range" oral hypoglycemic agent

for most of your diabetic patients

DBI

trade mark, brand of Phenformin

the full-range oral hypoglycemic agent... lowers blood sugar in mild, moderate, and severe diabetes, in children and adults

FOR MORE DEPENDABLE RESPONSE, start your patients on DBI—entirely different from the sulfonylureas in chemical structure, mode of action and spectrum of activity . . . usually effective in low dosage range (50 to 150 mg. per day).

3 out of every 4 stable adult diabetics are satisfactorily and comfortably regulated with DBI.

2 out of every 3 brittle diabetics (juvenile or adult) enjoy better stabilization and easier management with combination of DBI and injected insulin. The smoth, gradual onset of blood-sugar lowering action helps prevent dangerous shifts between hypoglycemic reactions and hyperglycemic ketoacidosis.

sulfonylurea failures – secondary failures and primary resistant patients may respond to DBI alone, or combined with a sulfonylurea.

no clinical toxicity in over 3000 patients studied closely for varying periods up to nearly three years.

On a "start-low-go-slow" dosage pattern, DBI is relatively well tolerated. Gastrointestinal reactions occur most frequently in dosages exceeding the practical maximum 150 mg. daily, but abate promptly upon reduction of dosage or withdrawal of DBI.

The physician prescribing DBI should be thoroughly familiar with its indications, dosage, possible side effects, precautions and contraindications, etc.

DBI (N^1-β-phenethylbiguanide HCl) is available as white, scored tablets of 25 mg. each, bottle of

Write for detailed literature.

u. s. vitamin & pharmaceutical corporation

american products co. ltd.

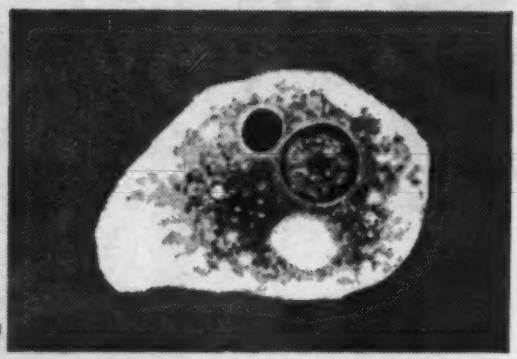
43 forbes st. bombay 1

(distributors)

AMEBIASIS

Intestinal and Extra-Intestinal

Amebiasis may be asymptomatic or may produce symptoms indicating low grade infection, inflammatory colonic disease with or without diarrhea, or symptoms resembling appendicitis, gallbladder disease, or peptic ulcer.[1]



"Frequently an unrecognized hepatitis coexists with intestinal amebiasis."[2]

Investigators agree that complete treatment of amebiasis must include a drug effective against hepatic complications as well as one which eradicates the intestinal parasites. Milibis and Aralen are highly recommended for this purpose.

ARALIS

REGD. TRADE MARK

Each tablet contains 250 mg. bismuth glycolylarsanilate* and 75 mg. chloroquine phosphate.†

Complete Therapy and Prophylaxis of Amebiasis

* **MILIBIS** REGD. TRADE MARK

For intestinal amebic infestation—a powerful amebicide, virtually nontoxic and highly effective clinically. Its relative insolubility assures high concentration in the large intestine.

† **ARALEN** REGD. TRADE MARK

For Extra-Intestinal amebiasis—"specific for amebic hepatitis and amebic liver abscess."[2] As effective as emetine but without its toxicity.[3]

WINTHROP PRODUCTS INC.

Exclusive Distributors **DEY'S MEDICAL STORES PRIVATE LTD.**
CALCUTTA, BOMBAY, DELHI, MADRAS, PATNA, GAUHATI, CUTTACK

References
1 Sodeman, W.A., and Beaver, P. C. : *Am. Jour. Med., 12 : 440*, Apr., 1952
2 Zavala, D. C., and Hamilton, H. E. : *Ann. Int. Med., 36 : 110*, Jan., 1952
3 Conan, N. J. : *Am. Jour. Med., 6 : 309*, Mar., 1949

MINOLAD AND VITADEC

TWO WIDELY PRESCRIBED PREPARATIONS

MINOLAD:
A palatable orange-flavoured tonic of vitamins A and D, minerals and LYSINE. Specially suitable for children.

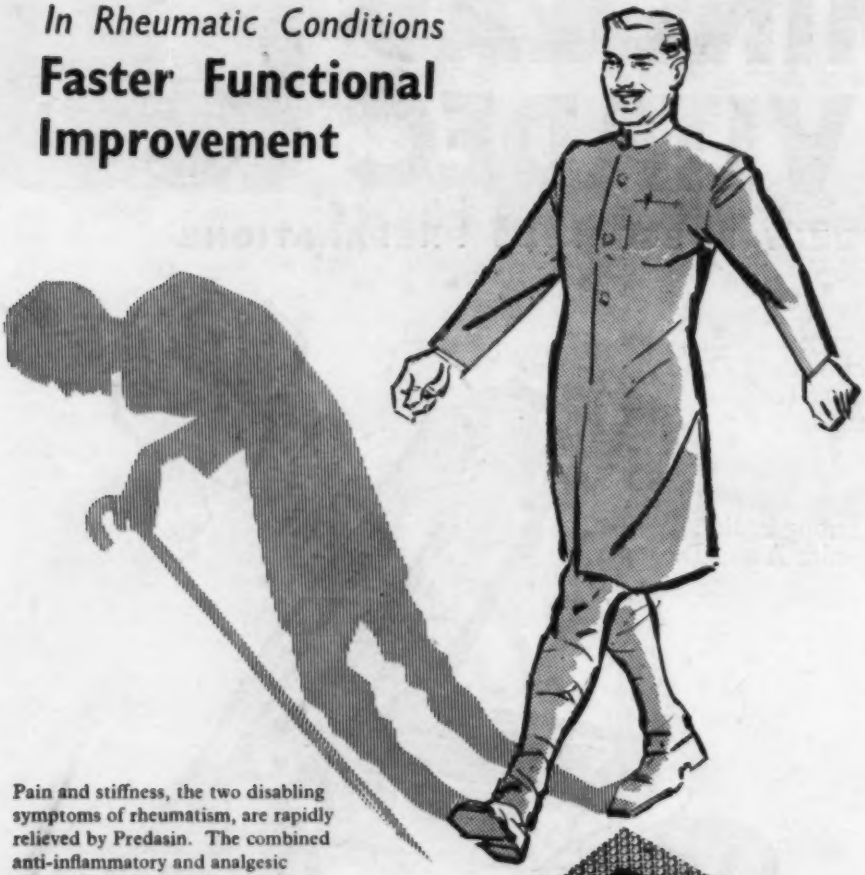
VITADEC:
For building strong bodies. Contains Vitamins A and D.

Products of: **TEDDINGTON CHEMICAL FACTORY PRIVATE LTD., BOMBAY**

Sole Distributors:
RALLIS INDIA LIMITED
Pharmaceutical Division
P.O. Box No. 229, Bombay-1

In Rheumatic Conditions

Faster Functional Improvement



Pain and stiffness, the two disabling symptoms of rheumatism, are rapidly relieved by Predasin. The combined anti-inflammatory and analgesic effect of Predasin suppresses tissue inflammation, relieves pain and restores normal mobility of the affected part.

Predasin

TABLETS

Each containing prednisone 0.5 mg. and aspirin 500 mg. In strip packs of 20 & 250.

GLAXO

GLAXO LABORATORIES (INDIA) PRIVATE LTD. Bombay • Calcutta • Madras • New Delhi

Depots: Gauhati • Vijayawada • Srinagar

Lignocaine?

SPECIFY XYLOTOX

trade mark brand

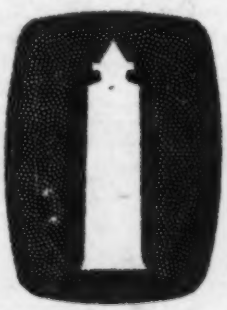
LIGNOCAINE Local Anaesthetics

RAPID · DEEP · CERTAIN · LASTING · SAFE

XYLOTOX SOLUTIONS

FOR MAJOR AND MINOR SURGERY ½%, 1% and 2% solutions, plain or with adrenaline, in 20 & 50 ml. bottles.

FOR SURFACE ANAESTHESIA OF THE MUCOSA. 4% solution, plain or with adrenaline, in 25 ml. bottles.

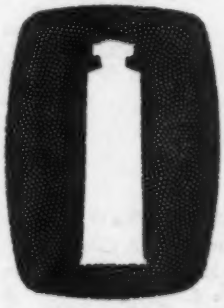


XYLOTOX JELLY

FOR EFFECTIVE URETHRAL AND VAGINAL ANAESTHESIA.

For surgery use; 15G. and 30G. tubes with applicators.

For instrument lubrication; Boxes 12 x 1.5G. Tubes.



XYLOTOX PASTES

FOR TRULY EFFICIENT SURFACE ANAESTHESIA OF THE MUCOSA.

XYLOTOX-NORMAL (without amethocaine).

XYLOTOX-EXTRA (with added amethocaine). ½-oz. tubes.

XYLOTOX ORAL

FOR QUICK, SIMPLE SURFACE ANAESTHESIA OF THE UPPER DIGESTIVE TRACT.

A viscous, pleasantly-flavoured product. 200 ml. bottles.

Made by the makers of 'Novutox' Local Anaesthetics

XYLOTOX *is a product of*

PHARMACEUTICAL MANUFACTURING COMPANY, Epsom, England

Distributed in INDIA by

J. L. MORISON, SON & JONES (INDIA) PRIVATE LTD.,

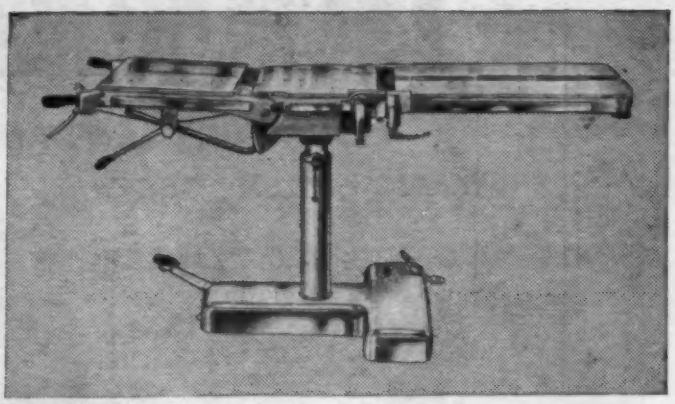
P.O. Box 1746, BOMBAY, also at DELHI, MADRAS, CALCUTTA

Literature and samples obtainable on request.

NEW! Table to meet all requirements of modern surgery

MAQUET VELOX

The Maquet-Velox Operating Table combines engineering excellence with the needs of modern surgery. Instantaneous adjustment by head-end controls facilitate quick and easy movement and change of operating positions. The 4-section X-Ray penetrable table top permits the taking of X-Ray photographs even during the operation: in fact, radioscopies can be performed on back rest and leg plates.



One of the many positions obtainable

In case of emergency, Trendelenburg position can be obtained quickly. Many other positions for specialised surgery can also be obtained without disturbing the patient.

For efficiency, versatility and adjustability Maquet-Velox is the most up-to-date operation table to depend upon.

A wide range of operation lights and sterilizers is at your disposal.

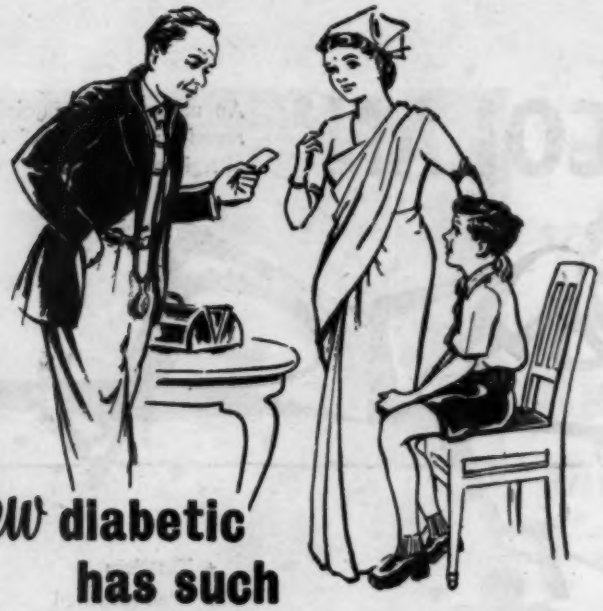
For further particulars write to:

PHILIPS INDIA LIMITED
7, Justice Chandra Madhab Road, Calcutta-20
Branches: Bombay • New Delhi • Madras • Patna
Lucknow • Kanpur • Bangalore

PHILIPS

PHILIPS *in the service of the medical world*

P 3736



the *new* diabetic has such advantages

Today, the new diabetic has many facilities to enable him to lead and enjoy a natural life.

A.B. Lente Insulin greatly simplifies the treatment of the majority of cases, one injection being sufficient to control the blood-sugar level for 24 hours.

A. B. Lente Insulin offers the following advantages:

- rapid onset with prolonged action
- no protein or peptide material present other than insulin itself
- meets the need of a higher percentage of diabetics than any other long-acting insulin
- transfer to A.B. Lente Insulin from other forms of insulin easily carried out
- the ideal preparation for newly diagnosed cases and the majority of juvenile cases

AB' LENTE INSULIN

A single daily injection will control the blood-sugar level of 90% of diabetic patients

In vials of 10 c.c., 40 or 80 units per c.c.

Joint manufacturers and licencees:

ALLEN & HANBURYS LIMITED • BRITISH DRUG HOUSES (India) PRIVATE LTD.

(Incorporated in England : Limited Liability)

'ANCOLAN'

An unique antihistaminic for *round-the-clock* relief of all allergic conditions.

- ★ Tasteless
- ★ Well-tolerated
- ★ Does not cause drowsiness
- ★ Inexpensive

Each 'ANCOLAN' tablet contains 25 mg. meclozine hydrochloride B.P.C., the histamine-blocking agent of low toxicity and prolonged activity. One or two tablets taken at night provide sustained control in all types of allergy for 24 hours.

Due to its potent anti-emetic action, 'ANCOLAN' is effective in preventing and treating nausea and vomiting, whether due to motion sickness, radiation sickness, or labyrinthine disturbances like Meniere's disease.

Packs:
Cartons of 30 and 500 cellophane-wrapped tablets in strips of 10.

BRITISH DRUG HOUSES (INDIA) PRIVATE LTD.
P.O. BOX 1341, BOMBAY-1
Branches: Calcutta - Delhi - Madras

BDH

you can safely recommend **Savlon** *antiseptic lozenges*

100 % reduction in oral streptococcal counts

'Savlon' Lozenges each contain (5 mg.) 'Hibitane' (chlorhexidine hydrochloride B. P. C.) together with a small quantity (2 mg.) of Benzocaine B. P. which does not hinder healing.

Saliva tests have shown that 'Savlon' Lozenges are markedly superior to other types of antiseptic lozenges in destroying common pathogens, including streptococci, and for this reason they are particularly suitable for use by dental surgeons in preventing secondary infection following dental extraction.

contain 'Hibitane' the new I.C.I. antiseptic

Savlon

antiseptic lozenges

Available at leading chemists and stores
Made and distributed in India by
IMPERIAL CHEMICAL INDUSTRIES (INDIA) PRIVATE LTD.
Calcutta Bombay Madras New Delhi

ISLC-2A

WELCOME ARRIVAL!

Amul

milk food for babies

APPROXIMATE COMPOSITION
per 100 grams of powder

PROTEIN	22.0 gm.	VITAMIN A	1500 I.U.
FAT	18.0 gm.	VITAMIN D	400 I.U.
CARBOHYDRATE	52.0 gm.	VITAMIN C	30.0 mg.
CALCIUM	1.0 gm.	VITAMIN B_1	0.6 mg.
PHOSPHORUS	0.8 gm.	VITAMIN B_2	1.0 mg.
IRON	4.0 mg.	VITAMIN B_6	0.3 mg.
NIACINAMIDE 6.0 mg.			

100 grams of powder = 471 calories

The makers of the famous AMUL milk products have now commenced the manufacture of Infant Food. This comes as the culmination of 5 years of exhaustive research by scientists of the Central Food Technological Research Institute (CSIR), Government of India. This research was undertaken, in close collaboration with AMUL milk technologists, to standardize the formula and process of preparation.

The formula of AMUL Milk Food for Babies is particularly designed to suit the nutritional requirements of babies in the tropics. The formula has been recognized by the Indian Standards Institution.

Prior to its introduction into the market, independent doctors have tested AMUL Milk Food for Babies among control groups of infants in Calcutta, Delhi, Mysore and Madras. The results of many of these Feeding Trials have been published* and they amply confirm AMUL Milk Food for Babies as being a high quality product—nourishing, readily digestible and highly palatable.

Ample and continuing supplies of Amul Milk Food for Babies will be initially available in Maharashtra and Gujarat States as well as in Delhi City. All-India availability will be achieved after a time.

* *Food Science*, 4 (10), 311; *Indian Journal of Pediatrics*, 29, (136), 290

Sole Distributors for India: **Voltas Limited**

KAIRA DISTRICT CO-OPERATIVE MILK PRODUCERS' UNION LTD. ANAND

daptazole* ensures that morphine's respiratory-depressant and narcotic effect is antagonised. Morphine combined with 'Daptazole' can therefore be administered in larger doses than previously in cases where relief from pain is required.

megimide* counters barbiturate poisoning. It is also invaluable in

(i) The treatment of barbiturate coma.

(ii) The lightening or terminating of barbiturate anaesthesia.

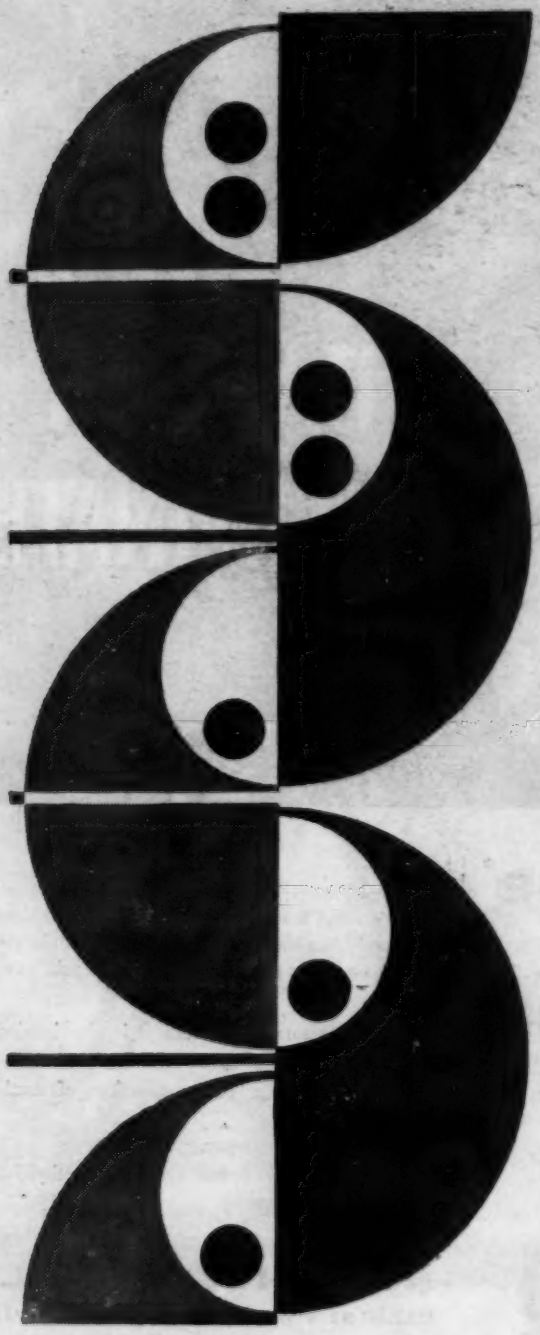
(iii) The study of epilepsy.

'Megimide' is the brand name of β-ethyl-β-methyl-glutarimide (bemegride)

A Nicholas Product

ASPRO-NICHOLAS LTD
Ethical Pharmaceutical Division
SLOUGH · BUCKS · ENGLAND
Ex 141 *trade mark

I.C.I. (INDIA) PRIVATE LTD · P.O. BOX 182 · CALCUTTA 1 · INDIA



Orisul
Trade Mark

Significant advance in sulphonamide safety

Intensive antibacterial therapy with virtually no side effects

Better diffusion in tissues: lower concentration in blood

Safer excretion pattern: no toxic cumulation

convenient 12-hourly administration

CIBA

NEVROVITAMINE 4

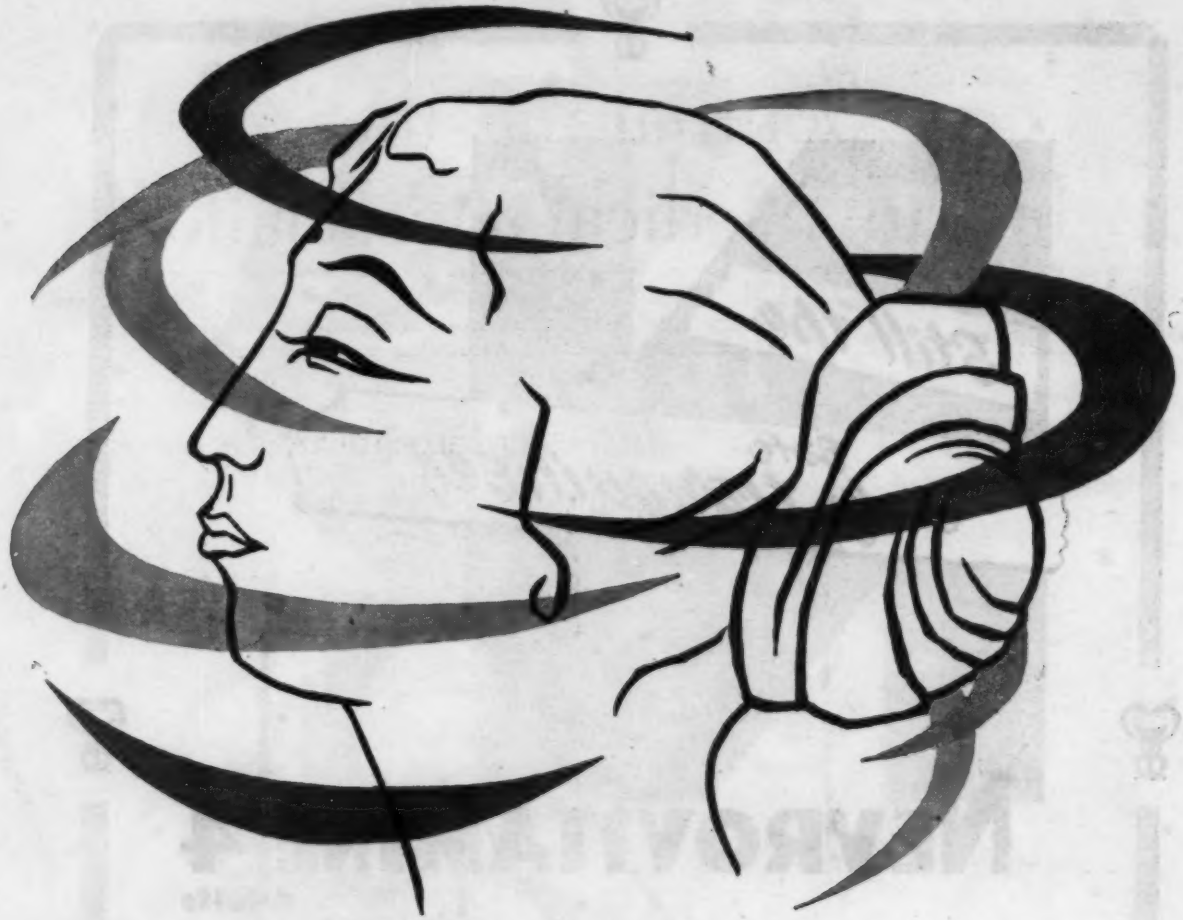
Adults

Synergistic combination of sedatives and restoratives for the treatment of all functional disorders; available in vials of 48 entero-coated tablets.

- No Toxicity
- No Habit Formation

For particulars please write to:

FRANCO INDIAN
PHARMACEUTICALS PRIVATE LTD.
Bapnu Ghar, Hornby Vellard, Bombay 18.



in pregnancy

PYRIMESIN

makes the mornings carefree and gay

EAST INDIA PHARMACEUTICAL WORKS LTD. CALCUTTA-26

EIPW/PA/1B

Journal of the Indian Medical Association

VOLUME 36
NUMBER 4

PUBLISHED TWICE A MONTH
EDITOR—P. K. GUHA, M.B., M.R.C.S. (ENG.), D.O.M.S. (LOND.)

CALCUTTA
FEBRUARY 16, 1961

ORIGINAL ARTICLES

CLINICAL AND THERAPEUTIC EVALUATION OF CHLOROTHIAZIDE IN OEDEMA

HARDEO NARAIN SINGH, M.D., M.R.C.P., D.T.M. & H. (LOND.)

Physician, Medical College Hospital, Patna

The advent of chlorothiazide constitutes a new era in diuretic therapy. The drug is an exceptionally potent, orally effective, non-mercurial diuretic agent. Chlorothiazide is known chemically as 6-chloro-7-sulfamyl-1, 2, 4-benzothiadiazine-1, 1-dioxide. This aromatic sulphonamide derivative was first synthesised by Novello and Sprague (1957). It is not primarily a carbonic anhydrase inhibitor (Ford *et al*, 1957) but it seems to possess considerable influence in the renal tubular transport of electrolytes, causing a marked decrease in the reabsorption of sodium and chloride and to a lesser degree, potassium and bicarbonate.

METHOD AND MATERIALS

Clinical and metabolic studies were carried out in thirty-three patients belonging to different groups. The patients were kept on a diet with 2 g. of sodium chloride and all other diuretics were withdrawn. In group A, there were 7 patients with anaemia and hypoproteinaemia. In group B, there were 15 patients with congestive heart failure of whom 6 had mitral disease, 4 pulmonary heart disease, 3 hypertensive heart disease and 2 coronary heart disease. Group C consisted of 5 patients of nephritis, and group D included 6 patients of cirrhosis of the liver. All the patients had oedema of the feet and ascites. Some had generalised anasarca.

The trial was started with 48 hours' rest in bed. A thorough clinical examination was done. The patients were weighed daily. The average daily fluid intake was maintained at about 820 ml. and 24 hours' urine was collected daily throughout the period of observation. The serum and urinary electrolytes (sodium, potassium, chloride) and blood urea were measured before and after 10 days of chlorothiazide therapy. The sodium and potassium levels were measured by flame photometry and chloride by the titration method. Routine examination of urine and stool, haemoglobin estimations, venous pressure recording, radiograph of chest and heart and electrocardiographic examination were done prior to and following the chlorothiazide medication.

Chlorothiazide was administered in doses of 500 mg. twice daily at 7 A.M. and 1 P.M. The clinical response, viz., diuresis and disappearance of oedema in various parts of the body, was recorded carefully from day to day during the course of the treatment. The clinical response was considered 'very good' when there was marked diuresis and disappearance of oedema, 'good' when there was marked diuresis with moderate disappearance of oedema, 'fair' when there was moderate diuresis and moderate disappearance of oedema, and 'poor' when there was slight diuresis and slight disappearance of oedema.

RESULTS

General effects—The patients tolerated the drug well. A few, however, showed minor side-effects. Case 20 had nausea, Case 18 had abdominal pain and Case 30 had diarrhoea for a few days, but in no instance was the drug withdrawn because of the signs of intolerance.

Group A included cases of anaemia with hypoproteinaemia. This group was characterised by

the fact that the clinical disappearance of oedema was very good in 1, good in 3, fair in 2 and poor in 1 case. The mean daily weight loss during chlorothiazide therapy was 762·0 g. The average daily fluid intake was 981 ml. and output 1917 ml. The minimum and maximum urinary output recorded was 1092 ml. and 2652 ml. respectively. The average fall in the plasma sodium, chloride and potassium levels was 12·6, 17·2 and 1·24 mEq per litre respectively. The urinary excretion of these electrolytes was increased. The average increase in urinary sodium, chloride and potassium levels was 93·7, 105·3 and 34·75 mEq respectively per twenty-four hours. Excretion of sodium and chloride ions was much increased but the excretion of potassium ion was not much affected. Blood urea estimations in 4 cases showed an average fall of 8·1 mg. per 100 ml. during chlorothiazide therapy, whereas the rest of the cases showed a rise in blood urea level on an average of 3·0 mg. per 100 ml. Of the 7 patients in this group one had bilateral and one unilateral hydrothorax, 3 had congestion of the lungs which cleared during chlorothiazide therapy.

Group B comprised of 15 cases of congestive heart failure. The clinical disappearance of oedema in 6 cases of mitral disease was very good in 3, fair in 1 and poor in 2 ; in 4 cases of cor pulmonale, it was very good in 3 and good in 1 ; in 3 cases of hypertensive heart disease, it was very good in 1, and good in 2 ; and in 2 cases of coronary heart disease, it was very good in 1 and fair in 1. The mean daily weight loss during the therapy was 687·6 g. The average daily fluid intake was 849 ml. and output 1896 ml. The minimum and maximum urinary output was 180 ml. and 4560 ml. respectively. The average fall in the plasma sodium, chloride and potassium levels was 11·5, 18·3 and 1·5 mEq. per litre respectively. The average increase in urinary sodium, chloride and potassium contents was 44·78, 47·07 and 44·4 mEq. respectively per twenty-four hours.

On further analysis of this group it was observed that in mitral disease the average fall in sodium, chloride, and potassium was 9·6, 19·4 and 1·45 mEq. per litre respectively, whereas similar figures for cor pulmonale, hypertensive heart disease and coronary heart disease were 11·7, 11·1, 1·28 ; 9·6, 20·9, 2·3 ; and 18·4, 17·6, 0·5 mEq. per litre respectively. The average daily urinary output in mitral disease, cor pulmonale, hypertensive heart disease and coronary heart disease was 1704 ml., 2073 ml., 2187 ml. and 1684·5 ml. respectively. The average increase in urinary sodium, chloride and potassium in mitral disease, cor pulmonale, hypertensive heart disease and coronary heart disease was 41·42, 55·4, 31·8 ; 58·9, 53·06, 30·6 ; 70·2, 33·3, 102·6 ; and 24, 15, 40·6 mEq. respectively per twenty-four hours.

It is obvious that the diuretic response was marked in cases of cor pulmonale and hypertensive heart disease and good in mitral and coronary heart disease. Fall in sodium, chloride and potassium levels of plasma in cor pulmonale and coronary heart disease was approximately alike and was almost similar in mitral disease and hypertensive heart disease.

On radiological examination 3 cases showed effusion which cleared during chlorothiazide therapy, 11 had congestion of the lungs of which 7 showed clearing, and 2 had consolidation which was not affected by the treatment.

Skiagrams of Case 22 suffering from congestive heart failure due to coronary heart disease showed : (a) effusion on the right side and congestion of the lungs, enlargement of the right and left ventricles, and the right auricle (Fig. 1, *vide* Plate) ; (b) disappearance of pleural effusion and pulmonary congestion and reduction in the size of the right auricle and ventricles after chlorothiazide therapy for 10 days (Fig. 2, *vide* Plate).

Group C consisted of 5 cases of nephritis. Clinical disappearance of oedema was very poor in 2, good in 2, and fair in 1 case. The average fluid intake was 732 ml. and urinary output 1785 ml. The mean daily weight loss during chlorothiazide therapy was 607·8 g. The average fall in plasma sodium, chloride and potassium levels was 14·4, 15·6 and 1·32 mEq. per litre respectively. The average increase in urinary sodium, chloride and potassium excretion was 72·83, 37·6 and 34·76 mEq. per litre respectively per twenty-four hours.

In this group, one case had effusion and 2 cases had congestion of the lungs which cleared up completely on chlorothiazide treatment.

X-ray of Case 28 suffering from nephritis showed : (a) pleural effusion on the left side and congestion of both the lungs ; (b) disappearance of congestion and effusion on chlorothiazide therapy for 10 days.

Group D had six cases of cirrhosis of the liver. The clinical response was good in 2 cases, fair in 1 and poor in 3. The average daily fluid intake and urinary output were 855 ml. and 762 ml. respectively. The mean daily loss in weight was 757·5 g. The average fall in plasma sodium, chloride and potassium levels was 16·03, 9·5 and 1·35 mEq. per litre respectively. The average increase in urinary sodium, chloride and potassium excretion was 10·8, 13·76 and 5·13 mEq. respectively per twenty-four hours.

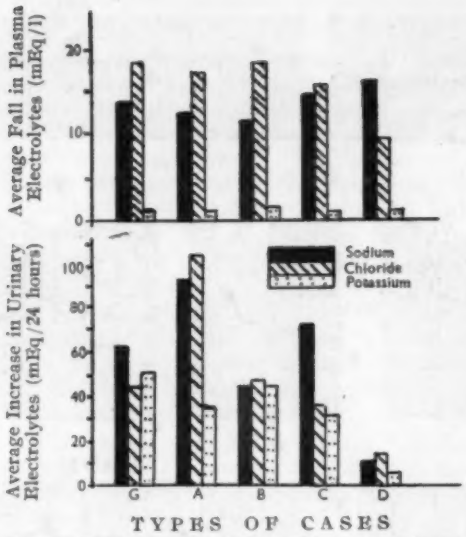


FIG. 3—SHOWING THE AVERAGE FALL IN THE PLASMA AND INCREASE IN THE URINARY ELECTROLYTES DURING 10 DAYS OF CHLOROTHIAZIDE THERAPY IN DIFFERENT TYPES OF CASES

G=General; A=Anaemia with hypoproteinaemia; B=Congestive heart failure; C=Nephritis; D=Cirrhosis of liver.

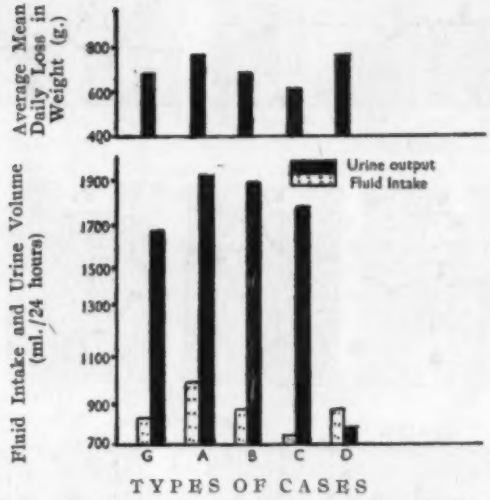


FIG. 4—SHOWING AVERAGE MEAN DAILY WEIGHT LOSS, FLUID INTAKE AND URINARY VOLUME DURING 10 DAYS OF CHLOROTHIAZIDE THERAPY IN THE DIFFERENT TYPES OF CASES

G=General; A=Anaemia with hypoproteinaemia; B=Congestive heart failure; C=Nephritis; D=Cirrhosis of liver.

Fig. 3 shows the average fall in the plasma and increase in the urinary electrolytes during 10 days of chlorothiazide therapy in different types of cases.

In this group, 3 cases had effusion and 3 congestion of the lungs which responded markedly to the diuretic therapy. Of six cases of cirrhosis of the liver with ascites who received chlorothiazide treatment, two (Cases 30 and 31) developed the precoma stage characterised by drowsiness, somnolence and flapping tremor and one (Case 25) went into hepatic coma with no response to painful stimuli. Chlorothiazide was stopped, and 5 per cent glucose with vitamin B-complex was administered in adequate amount, to supply the caloric requirements. Tetracycline 250 mg. four times a day and potassium chloride 4 g. daily were given by intragastric drip. The nitrogenous material in the colon was removed by enemas and magnesium sulphate orally. The intake of protein was withheld during the coma and precoma stage. All the three cases came round in about a week.

The diuretic response (1917 ml. a day) and mean daily loss of weight (762 g.) were observed maximum in cases with oedema of anaemia and hypoproteinaemia (Fig. 4). Cases of nephritis had also good diuretic response (1785 ml. a day) and daily mean loss of weight (607·8 g.) was also appreciable. In cardiac oedema diuresis of 1896 ml. a day and daily mean loss of weight of 687·6 g. were quite significant. The oedema and ascites of cirrhosis of liver showed poor diuretic response as compared with other clinical conditions.

Fig. 4 shows average mean daily weight loss, fluid intake and urinary volume in the different types of cases during 10 days of chlorothiazide therapy.

Venous pressure recordings during chlorothiazide treatment for 10 days showed an average fall of 35·6 mm. of water with maximum and minimum fall of 130 mm. and 4 mm. respectively.

Blood pressure recordings during this therapy recorded an average fall of 15·7 mm. Hg systolic and 7·1 mm. Hg diastolic at the end of 10 days of treatment.

No toxic effect on the kidney was observed. The albumin which was usually present in the untreated patients diminished as the oedema subsided.

Out of 7 cases of anaemia with hypoproteinaemia, 5 had varying amount of albumin in the urine before treatment, of which only 2 showed trace of albumin at the end of treatment. 5 cases of nephritis with copious albumin showed appreciable decrease in the albumin content of urine during the therapy. 3 cases of cardiac oedema had trace of albumin in the urine and one case of cirrhosis of the liver showed trace of albumin before and after treatment. The findings of blood urea

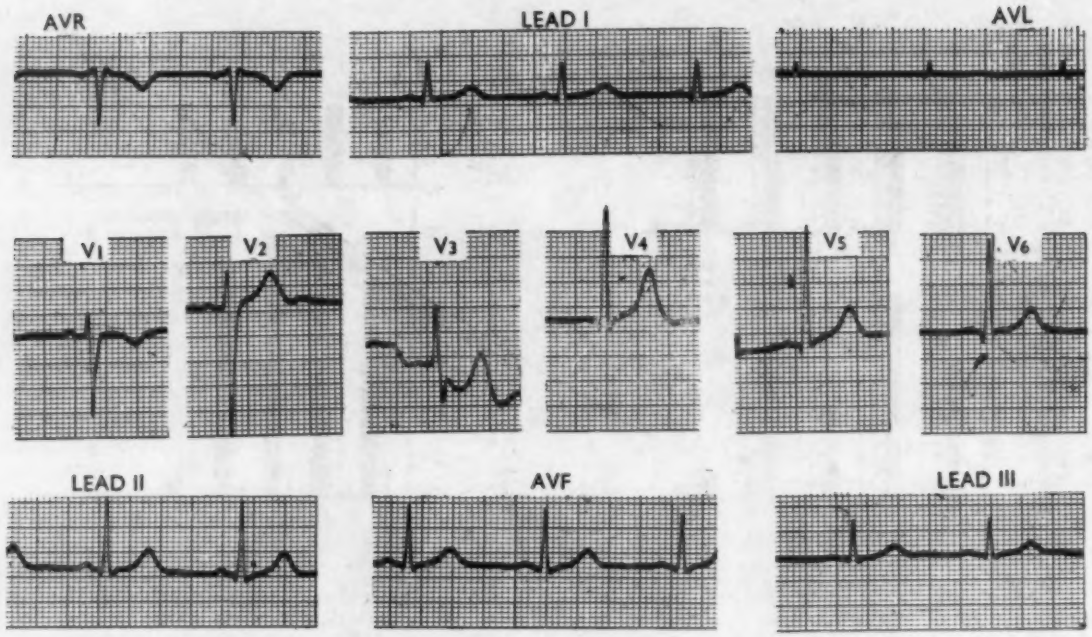


FIG. 5A—SHOWING ELECTROCARDIOGRAMS OF CASE 4 BEFORE CHLOROTHIAZIDE THERAPY

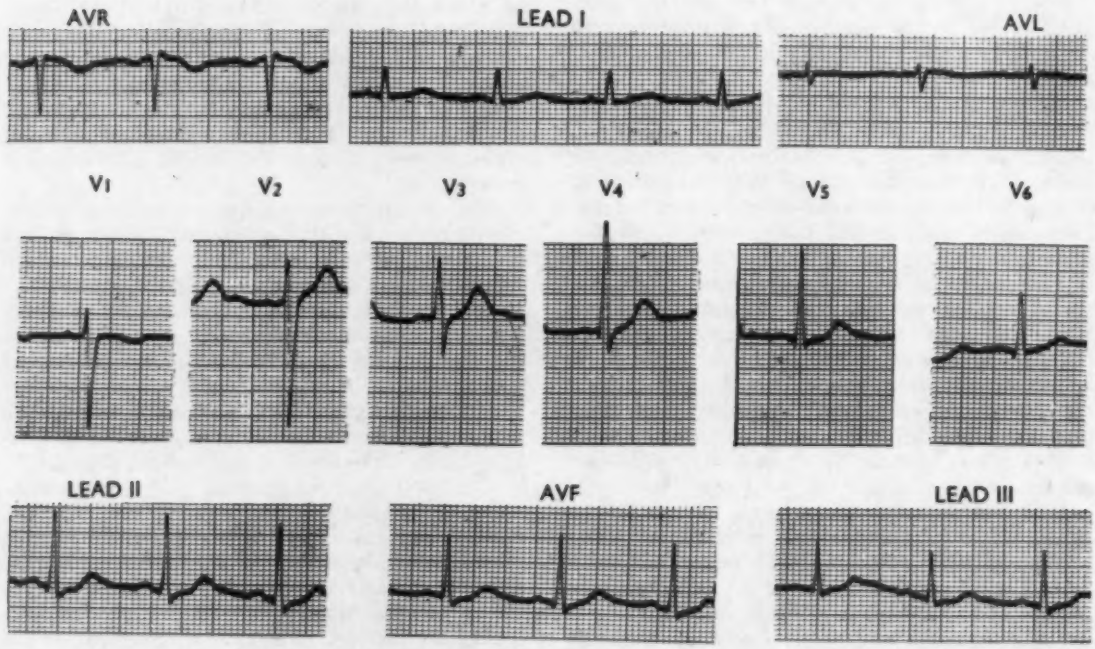


FIG. 5B—ELECTROCARDIOGRAMS OF CASE 4 AFTER 10 DAYS OF CHLOROTHIAZIDE THERAPY SHOWING LOW T-WAVES IN L_1, L_2, L_3, AVF, V_2, V_4, V_5, V_6 AND BIPHASIC T-WAVES IN AVL

estimation were variable. 25 cases showed a fall and 8 cases a rise in the blood urea levels.

Electrocardiographic changes—Of 33 patients who received chlorothiazide treatment, 13 showed electrocardiographic changes with low, flat or inverted T-waves, depression of the S-T segment, development of U waves. The average fall in the plasma potassium was 1·4 mEq. per litre. Marked electrocardiographic changes were seen in Case 3 with maximum fall of 4·8 mEq. in the plasma potassium level. Moderate electrocardiographic changes were seen in cases with 2·9 (Fig. 5), 2·5, 2·1 and 1·3 mEq. per litre fall in the plasma potassium levels. The other cases which showed mild changes in the electrocardiogram had fall of 3·6, 3·4, 2·9, 2, 1·1, 0·7, 0·3 mEq. in the plasma potassium levels.

Fig. 5, A and B, shows the electrocardiogram of Case 4 : (a) before chlorothiazide therapy ; (b) after ten days of chlorothiazide therapy showing low T waves in L_1, L_2, L_3, AVF, V_3, V_4, V_5, V_6 and biphasic T-waves in AVL.

The electrocardiogram of Case 11 after 10 days of chlorothiazide therapy showed depression of ST segment in L_1, L_2, V_3, V_4, V_5 and low T waves in V_5, V_6, biphasic in L_2 and inverted in L_3.

On the other hand, there were patients in whom fall in plasma potassium recorded were 1·8, 1·7, 1·5, 1·3, 1·2, 1·2, 1·1, 1·0, 0·8, 0·7, 0·6, 0·6, 0·6, 0·6, 0·5, 0·5, 0·4, 0·4, 0·4, 0·4 mEq. per litre with no electrocardiographic changes.

Clinical evidences of hypopotassaemia with marked muscular weakness, restlessness and disorientation were noticed in only one patient (Case 12), notwithstanding the fact that there has been marked fall in the plasma potassium level and electrocardiographic changes in several other cases. The fall in plasma potassium concentration in this case was 3·6 mEq. per litre and the electrocardiographic changes were mild with depression of ST segment in L_1, AVL, flat T in L_2, AVF.

Discussion

Chlorothiazide is an effective inhibitor of carbonic anhydrase *in vitro*. This does not, however, appear to be the primary mechanism for producing diuresis. The data (Tables 1 and 2) observed in this series show that oral administration of chlorothiazide in various clinical conditions of oedema increases primarily the excretion of sodium, chloride and potassium and secondarily the excretion of water. The site of action appears to be the renal tubules although the exact mechanism of action has not been properly established. It is believed that the drug acts by inhibiting the reabsorption of these ions by the renal tubules (Assali *et al*, 1959).

The cases of cirrhosis of the liver responded poorly by development of precoma and coma in three out of six cases which required special measures to tide over the crisis. Sherlock *et al* (1958) found hepatic coma in 53·7 per cent of cases during administration of chlorothiazide. The hepatic coma and precoma developing in these three cases were probably due to hypokalaemia. There might be another mechanism for this coma. Chlorothiazide *in vitro* has carbonic-inhibitor properties. Acetazolamide, a carbonic anhydrase inhibitor, induces hepatic precoma in some patients with liver diseases (Webster and Davidson, 1956). This has been attributed to blockage in uptake of ammonia by peripheral tissues (Dawson *et al*, 1957). Probably chlorothiazide might act in a similar way. Episodes of hepatic coma and pre-coma associated with chlorothiazide therapy have usually been accompanied by an elevation of the fasting arterial ammonia level (Read *et al*, 1958).

In all the clinical varieties of cases there was fall in plasma levels of sodium, chloride and potassium. The average fall in plasma sodium, chloride and potassium level in all the diseases together was 13·8, 18·25, and 1·4 mEq. per litre respectively. The average urinary excretion of the three electrolytes, viz., sodium, chloride and potassium, for all conditions was 64·64, 45·89 and 32·7 mEq. respectively per twenty-four hours.

Potassium depletion and hypokalaemia may develop during any diuretic therapy in which there is urinary loss of chloride or bicarbonate, much marked with the more potent ones. The increased chloride loss is accompanied by sodium loss. During the dietary sodium restriction in the oedematous conditions there is reduction in the amount of available sodium. Potassium is excreted in place of sodium with resultant hypokalaemia.

Continuous daily administration of 2 g. chlorothiazide may cause potassium depletion. A careful watch should be kept on the serum potassium level in severely ill refractory patients requiring treatment for a long time. Potassium chloride 2-6 g. in capsules should be given to prevent hypokalaemia, preferably between the periods of intermittent diuretic treatment, because Read *et al* (1958) and Slater and Nabarro (1958) observed that hypokalaemia was induced with chlorothiazide administration despite large potassium supplement. Potassium excretion follows the potassium intake during chlorothiazide therapy and hypokalaemia is not prevented. It is suggested by Poznanski *et al* (1958) that chlorothiazide should be given intermittently and extra potassium in between the

TABLE I—SHOWING PLASMA ELECTROLYTES (MEQ/L.) AND BLOOD UREA (MG./100 ML.) BEFORE AND FOLLOWING 10 DAYS OF CHLOROTHIAZIDE THERAPY

Case No.	Before chlorothiazide therapy				After chlorothiazide therapy			
	Sodium	Chloride	Potassium	Urea	Sodium	Chloride	Potassium	Urea
	GROUP A: ANAEMIA AND HYPOPROTEINAEMIA							
4	82·6	76·7	5·1	32	60·9	63·7	2·2	35
6	63	92·8	3·3	29	47·8	63·7	2·7	32·5
7	47	86·5	4·1	35	45·6	73·8	2·9	29
10	97·8	98	3·8	45	79·9	86·5	3·1	42
11	79·9	102·8	3·6	42	73·9	76·7	1·1	21·6
20	93·5	86·5	2·9	30	102·2	73	3·2	32·5
29	75·4	79·2	3·1	36·4	65·2	64·2	2·3	33
	GROUP B: CONGESTIVE HEART FAILURE							
	(a) Mitral stenosis							
2	82·6	83·2	5·1	32·5	71·7	67·1	2·2	30
12	93·5	70·3	4·7	42	63	69	1·1	29·7
14	63	60·9	3·2	28	60·9	54·1	2·6	37
18	69·6	79·8	4·5	48·3	65·2	67·2	3·8	27·5
19	71·7	92	2·3	35	86·9	51·3	1·9	32·5
21	76·9	73·3	4·1	33	65·2	33·8	3·6	27
	(b) Cor pulmonale							
5	63	76·9	3·4	29	48·7	83·2	2·8	31
17	63	67·9	4·7	46	58·7	62	2·6	32·5
26	97·8	70·5	4·3	78·4	82·6	54·9	3·2	27
33	100	79·4	2·2	45	86·9	67·6	2·6	41
	(c) Hypertensive heart disease							
3	86·9	92·8	6·6	43	78·3	67·1	1·8	32
16	63	79·5	4·6	39·1	56·5	59·5	2·8	27·5
27	87·7	93	2·9	36·4	73·9	76·1	2·6	15
	(d) Coronary heart disease							
22	82·6	70·5	2·6	30	56·5	39·4	2·2	27
32	104·3	81·7	2·9	38	93·5	77·5	2·3	35
	GROUP C: NEPHRITIS							
8	86·9	86·5	4·6	32	73·9	73·3	2·6	30
13	71·7	84·6	3·8	25	67·4	64·8	2·1	45
23	96·4	93	4	27	72·9	79	2·9	16·8
24	101·6	84·6	4·9	39	84·8	67·6	3·8	33
28	94·7	81·7	3·4	36·7	80·4	67·6	2·9	27
	GROUP D: CIRRHOSIS OF LIVER							
1	130·4	99	5·6	32·5	102·2	80	2·2	30
9	86·9	86·5	4·3	30	69·5	79	2·8	32·5
15	104·3	82·3	2·6	22	84·8	81·2	1·4	35
25	47·7	90·2	3·7	36	36·9	79	3·1	15
30	87·7	87·4	3·1	36·4	76·1	77·5	2·1	26
31	108·7	70·3	3·6	18·5	100	62	3·2	13·5

TABLE 2—SHOWING EFFECTS OF CHLOROTHIAZIDE ON VOLUME OF URINE IN 24 HOURS (ML.) AND ELECTROLYTES (MEQ/24 HOURS) AND CLINICAL RESPONSE

Case No.	Before chlorothiazide therapy				After chlorothiazide therapy				Clinical response
	Sodium	Chloride	Potassium	Urine in 24 hrs. (ml.)	Sodium	Chloride	Potassium	Urine in 24 hrs. (ml.)	
GROUP A: ANAEMIA AND HYPOPROTEINAEMIA									
4	15·5	9·7	7·2	1020	20·3	7·8	36·7	1200	Fair
6	8·2	15·4	7·7	210	208·5	195·7	33	1200	Very good
7	24·6	49·9	11·9	300	116·3	155	35·7	1230	Good
10	79·4	78·3	37	1020	265·1	121·2	76·7	1500	Fair
11	11·4	13·7	14·9	240	66·4	121·8	82·6	1800	Good
20	25·2	30·1	14	300	1·9	16	34	180	Poor
29	15·6	63·4	18·4	900	45·5	153·7	53·6	2100	Good
GROUP B: CONGESTIVE HEART FAILURE									
(a) Mitral stenosis									
2	97·7	10·1	15·3	1200	54·7	8·6	15·6	900	Fair
12	200·9	143·2	81·3	1200	229·6	257·4	122·6	2400	Poor
14	30·0	62	26·7	600	36·9	78·9	33·1	780	Poor
18	9·1	9·8	10·5	1260	76·1	43·3	34·4	2700	Very good
19	62·6	77·8	25·3	600	39·1	86·2	71·5	1800	Very good
21	70·3	13·7	12·4	1620	137·7	38	25·3	2700	Very good
(b) Cor pulmonale									
5	15·6	29·9	11·9	180	97·7	187	54·9	1560	Very good
17	148·7	132·5	16·1	1800	262·1	146·6	45·9	1800	Very good
26	7	14·2	13·8	360	154·3	72·2	65·6	1560	Good
33	14·3	26·2	8·4	300	50·7	100	49·5	1020	Very good
(c) Hypertensive heart disease									
3	41·1	72·4	18·4	1207	27·2	41·4	14·8	660	Good
16	193·4	191·7	37·7	3300	272·6	205·8	139·5	4200	Very good
27	6·5	6·7	13	300	67·7	61	116·5	1440	Good
(d) Coronary heart disease									
22	3	2·5	11·2	360	27	17·5	51·8	1380	Very good
32	102·1	118·7	56·4	1620	28·3	29·6	10·8	420	Fair
GROUP C: NEPHRITIS									
8	10·9	22·8	45·9	420	273·8	71·3	144·9	1320	Fair
13	239·1	166·3	71·5	1800	291·3	200	84·3	2220	Very good
23	1·04	6·1	8·2	240	1·5	5·3	12·2	180	Very good
24	10·4	16·7	55·7	1980	26·9	39·4	81	2820	Good
28	22·1	36·1	16·8	660	54·2	81·7	49·5	1320	Good
GROUP D: CIRRHOSIS OF LIVER									
1	24·6	34·6	8·7	570	71·2	47·7	18·3	1260	Good
9	3·1	29·6	7·3	300	13·0	30	13·4	300	Poor
15	62·6	50·7	25·3	1800	66·5	53·0	27	1800	Good
25	0·26	1·8	1·7	60	2·6	5	7·6	240	Fair
30	3·0	3·4	8·2	240	5·8	5·0	9·5	300	Poor
31	1·1	11·1	7·4	120	2·4	17·2	13·6	180	Poor

	Group A	Group B	Group C	Group D
Average fluid intake (ml.) ...	981	849	732	855
Average urinary output (ml.) ...	1917	1896	1785	262
Mean daily loss of weight (g.) ...	762	687·6	607·8	757·5

periods of chlorothiazide treatment instead of during the course.

The effect of diuresis on the disappearance of fluid from the serous cavities (pleural sacs) and upon the congestion of the lungs was remarkable as revealed in the radiographic picture (Fig. 1, *vide* Plate). This could be of a great therapeutic aid in such conditions along with the specific remedies for the primary disease.

The blood level of potassium is useful in detecting potassium depletion, but the electrocardiographic changes are not parallel with the blood level. The electrocardiographic variations have been considered at times to correlate better with cellular potassium (Keith *et al*, 1958). Electrocardiographic changes have invariably been noticed with much fall in the potassium level of the plasma. But sometimes it has also been found when there has been little fall in the plasma potassium concentration. The electrocardiogram may therefore occasionally provide a useful guide both in diagnosis and therapy of potassium depletion, as an ancillary technique to the study of blood chemistry. Disturbances in the sodium chloride or acid-base balance may provide effects that resemble hypokalaemia or hyperkalaemia. Furthermore, the underlying heart disease also produces its effect on the electrocardiogram. The electrocardiogram is thus only a rough guide in managing electrolytic imbalance and should always be taken in conjunction with all the clinical and chemical evidences available (Keith *et al*, 1958).

Only a few toxic reactions were noticed in this series. One case had nausea, another abdominal pain and a third diarrhoea, besides 2 cases of precoma and 1 case of hepatic coma and one case of clinical hypopotassemia. Jaffe *et al* (1958) reported 2 cases of purpura, Nordqvist *et al* (1959) encountered six cases of thrombocytopenia, Zuckerman and Chazan (1958) observed one case of agranulocytosis and Johnston and Cornish (1959) reported three cases of acute pancreatitis with chlorothiazide therapy.

Summary

Clinical and metabolic studies of 33 cases of oedema treated with chlorothiazide have been made. The average daily fluid intake was 819 ml. and average daily diuresis was 1665 ml. The average mean daily weight loss was 687·6 g. The average fall in plasma sodium, chloride and potassium was 13·8, 18·25 and 1·4 mEq. per litre respectively. The average urinary excretion of sodium, chloride and potassium was 64·64, 45·89, 52·7 mEq. respectively in twenty-four hours.

Withdrawal of fluid from the pleural cavities and disappearance of congestion of lungs were marked in the radiological studies. Electrocardiographic changes of hypopotassaemia were found in thirteen cases. Side-reactions observed were minimum. Nausea, abdominal pain, and diarrhoea were seen in a few cases and only lasted for a few days.

Acknowledgment

I wish to thank Dr. S. P. Singh, House Physician, for follow-up of the cases, Mr. J. A. Khan, Dr. P. C. Roy Choudhary and Dr. S. C. Ray for help in the biochemical estimations, Dr. J. P. Sinha, Radiologist, for skiagrams and the Superintendent, Patna Medical College Hospital and Dr. J. N. Mehrotra, Deputy Director of Health Services, Bihar, for the facilities to conduct the research work. My thanks are also due to Messrs. Merck, Sharp and Dohme for generous supply of chlorothiazide and to Unichem Laboratories, Bombay, for research scholarship awarded to the assistants.

References

Assali, N. S., Judd, L. L. and Mondz, M.—*J.A.M.A.*, **169** : 96, 1959.

Dawson, A. M., De Groote, J., Rosenthal, W. A. and Sherlock, S.—*Clin. Sc.*, **16** : 413, 1957.

Ford, R. V., Moyer, J. H. and Spurr, C. L.—*Arch. Int. Med.*, **100** : 582, 1957.

Jaffe, M. O. and Kierland, R. R.—*J.A.M.A.*, **168** : 2264, 1958.

Johnston, D. H. and Cornish, A. L.—*Ibid*, **170** : 2054, 1959.

Keith, J. D., Rowe, R. D. and Vlad, P.—Heart Disases in Infancy and Childhood, 1958.

Nordqvist, P., Cramer, G. and Bjorntore P.—*Lancet*, **1** : 271, 1959.

Novello, F. C. and Sprague, J. M.—*J. Am. Chem. Soc.*, **79** : 2028, 1957.

Poznanski, W. J. and Cromie, B. W.—*Brit. M. J.*, **1** : 1553, 1958.

Read, A. E., Haslam, R., Laidlaw, J. and Sherlock, S. —*Ibid*, **1** : 966, 1958.

Sherlock, S., Read, A. E., Laidlaw, J. and Haslam, R. —*Ann. N. Y. Acad. Sc.*, **71** : 430, 1958.

Slater, J. D. H. and Nabarro, J. D. N.—*Lancet*, **1** : 124, 1958.

Webster, L. T. and Davidson, C. S.—*Proc. Soc. Exper. Biol.* (N.Y.), **91** : 27, 1955.

Zuckerman, A. J. and Chaznan, A. A.—*Brit. M. J.*, **2** : 1338, 1958.

Fig. 1—Skiagram before treatment showing pleural effusion on the right side, congestion of lungs and enlargement of both ventricles and the right auricle

Fig. 2—Skiagram after treatment showing disappearance of pleural effusion and pulmonary congestion and reduction in the size of the right auricle and ventricles

SINGH—*Clinical and Therapeutic Evaluation of Chlorothiazide in Oedema (p. 133)*

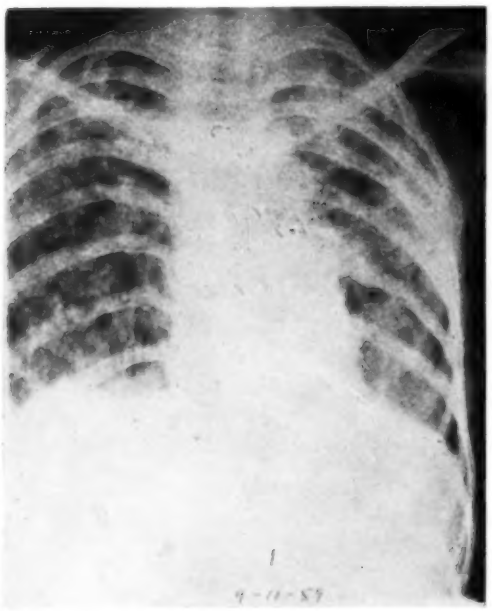


Fig. 1—Skiagram of the chest showing presence of exudative foci in both the apices, before treatment (Case 1)

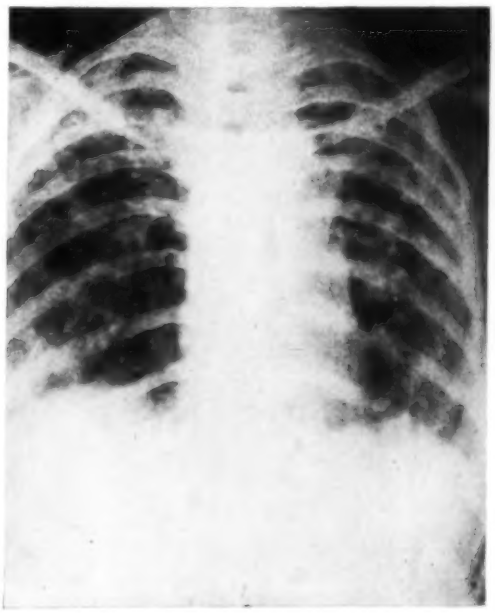


Fig. 2—Skiagram of the chest showing slight clearance of exudative foci at the termination of treatment (Case 1)

TANDON et al—*Rudanti in Pulmonary Tuberculosis (p. 143)*

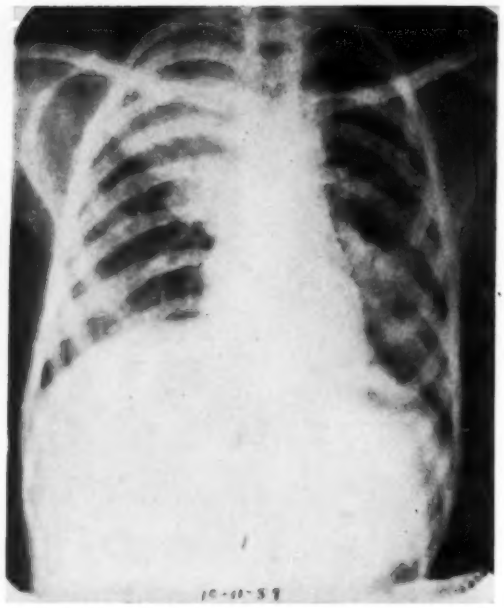


Fig. 3—Skiagram of the chest showing diffuse involvement of both lungs simulating productive type of tuberculosis, before treatment (Case 2)

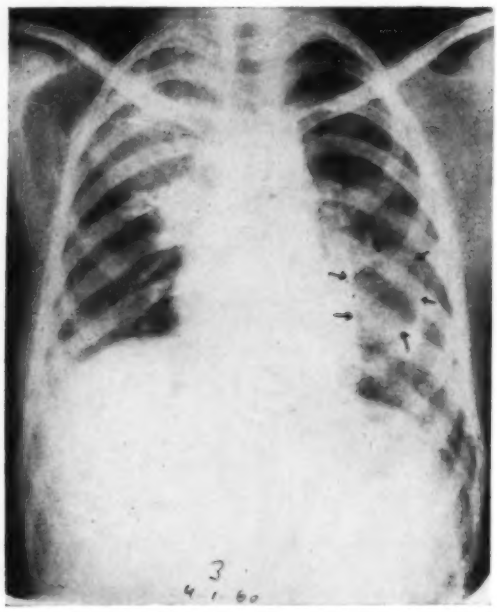


Fig. 4—Skiagram of the chest showing a cavity in the left hilar region which appeared during therapy lasting for 6 weeks (Case 2)

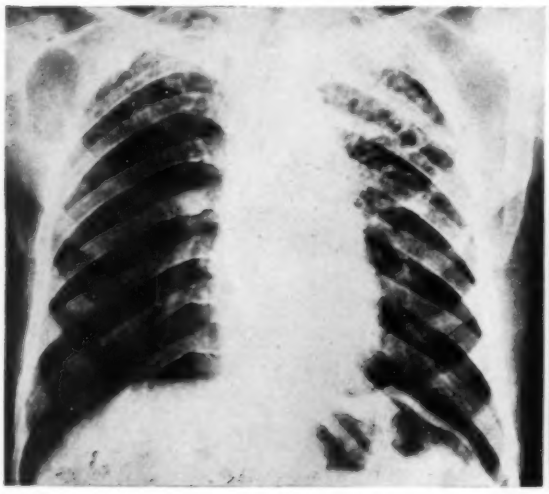


Fig. 5—Skiagram of the chest showing presence of exudative foci in both the apices, before treatment (Case 9)

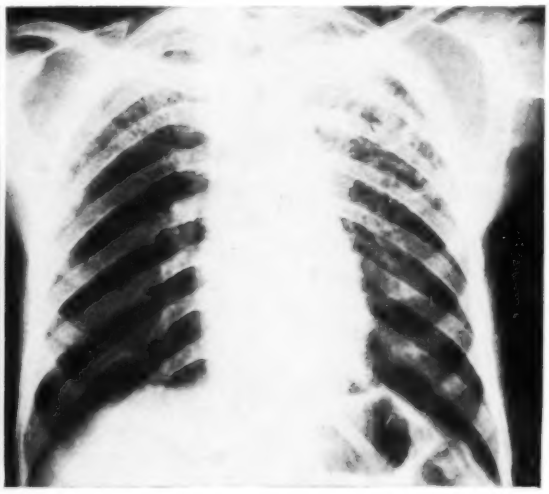


Fig. 6—Skiagram of the chest showing no clearance of exudative foci at the end of treatment for 6 weeks (Case 9)

ENGRAVED & PRINTED BY REPRODUCTION SYNDICATE, CALCUTTA 6

RUDANTI IN PULMONARY TUBERCULOSIS*

R. N. TANDON, M.R.C.P., D.M.R.E., T.D.D., F.A.C.P.

B. K. KHANNA, D.T.D., M.D.

R. P. BAJPAI, M.B.B.S.

AND

S. H. ZAIDI, M.B.B.S., PH.D., D.C.P.

Department of Tuberculosis, K. G. Medical College and Central Drug Research Institute Lucknow

Stimulated by the successful use of the powdered fruit of 'rudanti' (*Capparis Moonii*) by the tribal people in Southern India for the treatment of septic wounds, Sheth and Krishnamurthy (1958) studied its effect in human cases of pulmonary tuberculosis. The results of their clinical trial were very encouraging. Similar results have also been reported by Damle (1960). However, the drug proved to be ineffective in *in vitro* test and the same was found to be true in experimental studies (Mukerji and Gupta, 1958).

During a discussion on the relative efficacy of the drug at the Symposium of Chemotherapy, Central Drug Research Institute, Lucknow, Tandon (1958) raised certain objections to the interpretation of the x-ray pictures of cases treated with rudanti. It was decided to evaluate its efficacy in hospitalised cases of pulmonary tuberculosis at Kasturba T.B. Clinic and Hospital. The present report is a preliminary communication on the subject.

Material and Methods

Ten cases of chronic pulmonary tuberculosis admitted to Kasturba T.B. Hospital, were allocated for this study. The patients included both treated and untreated cases. They were initially put to bed rest for a week, during which time they were investigated. These investigations included recording of maximum and minimum temperatures, pulse rate, appetite, weight, general condition, x-ray examination of the chest, sputum examination for acid-fast bacilli (smear examination noted down according to Gaffky counts) and E.S.R. (Westergren's technique). Following an initial period of observation the patients adapted themselves to the hospital environment, and were then given rudanti tablets in dosage of 3 tablets 3 times a day (9 tablets a day) as recommended by Krishnamurthy (personal communication).

The investigations were repeated at monthly intervals. All the cases were screened after 6 weeks of therapy and those who tended to demonstrate even the slightest objective improvement were continued on the drug for a longer period. The longest period of administration extended over a period of 13 weeks.

Following the withdrawal of rudanti all these cases were put on standard anti-tuberculous therapeutic schedules and their progress recorded. Thus the cases ultimately served as their own control.

Results

Results obtained with rudanti and detailed analysis of the 10 cases are given in Table 1.

Discussion

A study of the results obtained in the clinical trial reveals that rudanti, as such, has little effect on the natural course of the pathology of tuberculosis.

Subjective symptoms—Improvement in the subjective symptoms could not be regarded as significant because of two reasons. First, we had to consider the psychogenic effects of hospitalisation. Secondly, the effect of bed rest on the subjective symptoms could not be easily dismissed. Finally, the dissociation between the subjective and objective findings confirmed our contentions.

Temperature—Pyrexia remained completely unaffected in the series of cases under review. Four cases who were previously afebrile continued to remain so. On the other hand, those who had been pyrexial on admission continued to have similar bouts of temperature during rudanti treatment. However, their temperature subsided when they were switched on to regular treatment with standard anti-tuberculous chemotherapy.

E.S.R.—A definite fall in the E.S.R. was recorded in practically all the cases of our series. This was apparently in close conformity with the subjective improvement. This could, to our mind, be due to bed rest and not to any specific effect on the toxaemia of tuberculosis itself.

Radiological changes—Radiologically, clearance of exudates was recorded in one case of our series while in another there was definite deterioration of the radiological picture. In yet another case the radiological condition remained stationary. In all such cases a distinct radiological improvement was subsequently noted when routine anti-tuberculous chemotherapy was instituted.

U. (Case 1), a housewife aged 20 and a resident of Lucknow, was admitted to the hospital on 12-11-59 with

* A preliminary report based on a clinical trial on 10 cases carried out in the Department of Tuberculosis, K. G. Medical College, Lucknow.

TABLE 1—SHOWING AN ANALYSIS OF THE 10 CASES OF PULMONARY TUBERCULOSIS STUDIED

Case No.	Diagnosis* and involvement	Therapy before admission	Temperature (in °F)		E.S.R. (mm)		Bacteriology of sputum		Skiagram		Over-all response and remarks
			Before	After	Before	After	Before	After	Before	After	
1	Bilateral Stage III	SM. 30 g., PAS and INH for 3 months	Afebrile	Afebrile	80	10	–	–	Bilateral, exudative type of lesion, with cavity in left apex	Exudation cleared up	Improved Clearance of exudates and fall in ESR
2	Bilateral Stage III with cervical adenitis	None	Max. 99 Min. 98	100 98	120	100	G2+	G2+	Bilateral productive type of lesion with right upper lobe atelectasis	Same, with appearance of a cavity in left parahilar area	Worse No effect on glands and pyrexia
3	Bilateral Stage III	Grossly and irregularly treated	Afebrile	Afebrile	20	18	–	G2+	Bilateral productive type of lesion	Stationary	Worse Sputum became positive
4	Bilateral Stage III	None	Max. 102·2 Min. 98	100 98	100	40	G2+	G1+	Bilateral extensive cavitary lesion	Stationary	Stationary
5	Left lung Stage II	None	Max. 100 Min. 99	100 98	80	16	G1+	—	Left upper lobe atelectasis	Stationary	Sputum converted (?)
6	Bilateral Stage III	Grossly and irregularly treated	102	102	90	40	G2+	G2+	Bilateral productive disease	Stationary	Stationary
7	Bilateral Stage III	None	Max. 101 Min. 99	101 99	60	45	G2+	G1+	Bilateral productive lesion	Stationary	Stationary
8	Left lung Stage III	None	Afebrile	Afebrile	60	40	–	–	Left lung productive disease with cavitation	Stationary	Stationary
9	Bilateral Stage III	None	Max. 101 Min. 98	101 98	40	36	–	–	Bilateral apical productive type of lesion	Stationary	Stationary
10	Bilateral Stage III	Grossly and irregularly treated	Max. 100 Min. 98	100 98	43	...	G1+	Not done	Left lung giant cavity with infiltration both lungs	Not done	Complained of itching and burning all over body, and insomnia. Possibly a phenomenon of sensitisation. Drug withdrawn.

* Staging of radiological lesions was done according to recommendations of Indian Tuberculosis Association.
SM—Streptomycin. Max.—Maximum. Min.—Minimum. – =negative. + =positive. 'Before' and 'After' means before and after treatment.

complaints of cough with expectoration and irregular bouts of low grade pyrexia for the last 6 months. Prior to her admission the patient had taken 1 g. of streptomycin by. I.M. injections on alternate days and INH 400 mg. daily by mouth for two months. She was afebrile at the time of admission. The x-ray of her chest revealed the presence of exudative foci at both the apices (Fig. 1, *vide* Plate). She was put on rudanti treatment in the same dosage as described above. As there was slight clearance of exudative foci at the end of 6 weeks (Fig. 2, *vide* Plate) rudanti treatment was continued. After another 4 weeks it was noted that the radiological clearance had halted. Since she continued to remain febrile during treatment with rudanti, she was switched over to standard anti-tuberculous chemotherapy.

One patient (Case 2), on the other hand, showed definite deterioration of the radiological picture. A large cavity was found to have appeared in the left hilar region during the period of therapy (Figs. 3 and 4, *vide* Plate). No other radiological changes were noted in the rest of the lungs.

K. (Case 9), a gardener aged 24, was admitted to the hospital on 19-10-59 with complaints of cough, expectoration, low grade pyrexia and occasional attacks of haemoptysis for the last 1 year. The patient had not received any treatment prior to his admission. He was running a low grade pyrexia ranging between 101° and 98°F every day. The sputum was negative for A.F.B. He was given rudanti in the usual dosage. After 6 weeks of therapy, the clinical and radiological condition (Figs. 5 and 6, *vide* Plate) remained stationary. Rudanti was then withdrawn and the patient was put on streptomycin and isoniazid in usual dosage. He made an uneventful recovery.

Sputum conversion—Sputum was found to have been converted in one case only during rudanti treatment:

M. A. (Case 5), at the time of admission, had been excreting very few (G1) bacilli in the sputum. After six weeks of therapy, no bacilli could be detected on smear examination of the sputum.

While the disappearance of the bacilli could well be due to the drug itself, one has to keep certain points in mind. The number of bacilli in the sputum to start with was very few. Spontaneous fluctuation in the bacterial population of the sputum is a well known phenomenon. Failure to convert sputum in other cases who were sputum-positive, at the time of admission, indicated that perhaps the conversion of sputum in the above-mentioned case could be a chance coincidence rather than being due to specific anti-tuberculous action of the drug in question. The case cited below is illustrative:

S. P. S. (Case 3), who was sputum negative at the initiation of rudanti treatment, was ultimately found to be excreting the bacilli in the sputum at the termination of the therapy. The case at the time of reporting is lying in the hospital and being treated with standard anti-tuberculous chemotherapy.

Lymph node changes—A case of pulmonary tuberculosis with tuberculous lymphadenitis did not show any regression in the size of the enlarged lymph nodes while on rudanti treatment. The case is being presented below:

S. (Case 2), a Hindu housewife aged 18 years, a resident of Barabanki, was admitted to the hospital on 9-11-59, with complaints of low grade fever, cough with expectoration for the last 1½ years and haemoptysis for the last 15 days. On admission the patient was found to have enlarged matted masses of lymph glands all over the neck, with diffuse involvement of both lungs simulating productive type of the disease. The sputum was found G 2+. She was put on rudanti treatment in the usual dosage. After 6 weeks of therapy no change in the clinical picture was recorded. Radiologically a cavity (2 cm. in diameter) appeared in the left hilar region. The patient was then switched over to streptomycin and isoniazid in the usual dosage, and ultimately she made an uneventful recovery. The glands in the neck also showed a tendency to regression.

Hypersensitive reactions—Symptoms suggestive of hypersensitive reactions were observed after rudanti therapy.

B. (Case 10), when put on rudanti treatment developed symptoms suggestive of hypersensitive reactions, e.g., itching, mental irritation and insomnia. The drug had to be withdrawn after 5 days. The symptoms reversed completely thereafter. The patient could not be investigated fully because he left the hospital against medical advice shortly after the drug had been withdrawn.

Summary

Rudanti was tried on 10 hospitalised cases of pulmonary tuberculosis. One case had also, in addition, tuberculous lymphadenitis. The drug apparently was found to be of no clinical significance.

Acknowledgment

The authors are grateful to the Indian Council of Medical Research for the liberal supply of rudanti. They are also thankful to Drs. Maheshwari Prasad, U. N. Johri and P. S. Rastogi for their co-operation in this study, and to Mr. Verma for the x-ray photographs.

References

Damle, V. B.— *J. Indian M. Profession*, **6**: 366, 1960.

Mukerji, B. and Gupta, S. K.—Symposium on Chemotherapy (1958), Central Drug Research Institute, Lucknow.

Sheth, S. C. and Krishnamurty, K.—*Ibid*, p. 111, 1958.

Tandon, R. N.—*Ibid*, p. 113, 1958.

SKELETAL TUBERCULOSIS ASSOCIATED WITH PULMONARY TUBERCULOSIS

A Review of 24 Cases

D. K. SEN, M.B. (CAL.), D.T.D. (DELHI), F.C.C.P. (U.S.A.)

R. M. O., Kanchrapara T. B. Hospital, West Bengal

Introduction

Pulmonary tuberculosis is the most common variety of the disease in this country. It is not feasible to treat all such cases in institutions. The infection therefore spreads to many, and not only pulmonary tuberculosis but other forms of the disease are found in large numbers amongst the people. The incidence of tuberculosis of the bone and joints is next to that of pulmonary tuberculosis. Tuberculosis is a systemic disease with local manifestations, e.g., pulmonary tuberculosis, skeletal tuberculosis, tuberculosis of the genito-urinary tract, etc. The disease may not affect only a particular system, but two or more systems may be affected simultaneously in the same individual.

Skeletal tuberculosis is always secondary to some active lesion in the body, which may not be always overt clinically, and the diagnosis in the early stage is difficult. The diseased person often becomes deformed and disabled and remains as an economic burden to his family. Early diagnosis and proper treatment can improve matters.

This paper reviews cases of skeletal tuberculosis associated with pulmonary tuberculosis, which were found amongst the inmates of a hospital meant for the treatment mainly of pulmonary tuberculosis (925 cases of pulmonary tuberculosis). We present here a brief general discussion about the aetiology, pathology, diagnosis as well as a few interesting features of the disease. Treatment of particular bones and joints being the arena of specialists, the general principles of treatment only have been outlined.

Aetiology

Both sexes may be equally affected. Though the commonest cause of crippledom in childhood is osteoarticular tuberculosis, the disease may also affect the adults and the elderly.

M. tuberculosis (human type) is the causative organism in almost all the cases. Infection with the bovine type of bacillus also occurs, and this is usually due to ingestion of unboiled milk from the infected cattle. Boiling of milk is a safeguard against this type of infection. With the adoption of proper pasteurisation methods for milk and tuberculin testing of the cattle, infection from this source has been considerably minimised.

Original work identifying the type of bacillus responsible for the causation of bone and joint tuberculosis in our country are not many. Recently Mookherjee (1956, 1958) in India investigated 143 cases of skeletal tuberculosis and in 108 of them the causative organism isolated was found to be *M. tuberculosis* (human type), and all his cases had associated pulmonary lesions. Figures obtained by carrying out special surveys in England and Wales during the Second World War show the incidence of disease to be much lower, and out of 554 cases surveyed, 19·7 per cent cases were found to be due to the bovine type.

Pathology

The condition starts as a metastatic focus secondary to some lesion, whether overt or concealed, elsewhere, and gives rise to a bacillaemia. Infected emboli which are sent out into the blood stream, give rise to skeletal tuberculosis. Bone and joint tuberculosis is haematogenous in origin. Blood cultures in a high proportion of phthisical patients are from time to time positive for *M. tuberculosis*. Mookherjee (1958) from his study of 143 cases found that this occurs secondarily from pulmonary tuberculosis. Mercer (1952) attributed the causation in 20 per cent of his cases to be of pulmonary origin. Others also reported high incidence of pulmonary tuberculosis associated with tuberculosis of bones and joints. That the disease may occur as a result of lymphatic spread has also been suggested by some workers. Besides the anatomical position of the thoracic duct in relation to the thoracic spine renders the latter more vulnerable to the disease than the other bones and joints.

There is also the possibility of concomitant 'insemination' of the bone and synovial membranes as the result of tuberculous bacillaemia, and the synovial membrane and the bones may be almost immediately involved. When the bacilli get entrapped at the joint by the reticuloendothelial cells, the earliest change visible is at the periphery of the joint, where the synovial membrane is reflected from the cartilage. This is also favoured by the fact that at this region, the arteries which form the circulus vasculosus of Hunter are all end-arteries. The growing ends of the bones in children which are richly supplied with blood similarly allow the bacilli to be lodged there. When the synovial membrane gets infected, there is hyperaemia, swelling and exudation of fluid. A pannus forms over the cartilage at

the point of reflection of the synovial membrane, and this gradually spreads and erodes the cartilage, and subchondrial tubercles also appear now. The cartilage is thus involved both from beneath and from the surface, but being an inert and avascular tissue, it survives for long and the infection also does not penetrate it. When the infection of the joint is established, two pathological processes are at work, viz., (1) destruction of bone due to the tuberculous process, and (2) destruction of bone due to the infarction and ischaemic necrosis occurring as a result of the arteritis of the vessels supplying the part. Lysis of the bone occurs and formation of new bone is seldom seen in tuberculosis, the lumbar spine in adults being an exception. Thus the process of involvement is characterised by formation of granulation tissue, rarefaction, destruction, abscess formation, sequestration, disorganisation of the joints and later on sinus formation with chronic purulent discharge.

There are three stages in skeletal tuberculosis, viz., (1) stage of progress when splintage is indicated ; (2) stage of fixation when the force of invasion and the resistance of the patient are evenly balanced and surgical interference is best taken up at this stage ; and (3) stage of repair. The changes associated with repair are recalcification and re-ossification and a destroyed joint is replaced by fibrous or bony ankylosis. The latter does not occur early, but may occur after a lapse of several years. Fibrous ankylosis may not be sufficiently strong to resist the force of abductor or flexor group of muscles or of gravity, and thus deformity may occur. Bone grafting is done to convert fibrous to bony ankylosis.

Diagnosis

Diagnosis in the early stage is essential for good results but this is difficult. Loss of function appears first and this is very marked. Limitation of function is due to pain. The swelling is the next important physical sign, provided the lesion is situated in a clinically accessible area, and is visible and palpable. It feels soft and pulpy and gradually fades away into the surrounding tissue. This being a chronic and low grade infection, the signs and symptoms of inflammation are not marked. It is to be noted that these early symptoms show signs of remission after taking rest. Fever, loss of weight, toxaemia, spontaneous pain, and tenderness are comparatively late signs of the disease.

X-ray examination at the early stage is often negative. Definite radiological signs appear only when the disease is well advanced, and causes a lesion of sufficient size to give rise to a contrast shadow. If the disease is suspected on clinical grounds alone, skiagram of bones taken by tomographic technique may be of diagnostic help. But this can only be confirmed by making a biopsy of the involved tissue, as well as of the regional lymph gland whenever this is enlarged, and a histological and bacteriological examination of the suspected biopsy material. Culture of the tubercle bacilli and guinea-pig inoculation should also be done. Blood counts showing high lymphocyte count and a high E.S.R. are also suggestive of the disease. Tuberculin reaction if positive, also suggests the possibility of the disease. Diagnosis in the later stages is usually obvious and clinical features and x-ray changes are characteristic.

Review of Cases

1. *No. of cases reviewed*—24 (all associated with pulmonary diseases)

2. *Age group of patients*—
   15-25 years— 4 cases (16·6%)
   26-40 years—19 cases (79·2%)
   Over 40 years—1 case (4·2%)

3. *Sex*—Males 8 cases. Females 16 cases.

4. *Sites of osteoarticular lesion* :
   (a) Spine—19 cases (79·2%)
   Cervical—nil
   Dorsal—7 cases (36·8%)
   Lumbar—9 cases (47·3%)
   Dorsolumbar—3 cases (15·8%)
   (b) Hip joint—3 cases (12·5%)
   (v) Ankle joint—2 cases (8·3%)
   (d) Other bones and joints—nil

5. *Type of associated lung lesions* :
   (a) Lesions with frank cavities visible in P.A. x-ray films—8 cases (33·3%)
   (b) Disseminated lesions of various types, viz., exudative and productive, with no obvious cavities, but showing areas of atelectasis, fibrosis, hard nodules, etc.—12 cases (49·9%)
   (c) Miliary type of lung lesion—1 case (4·2%)
   (d) Pleurisy with effusion and with no parenchymatous lesions—2 cases (8·4%).
   In one of these cases the aspirated fluid was negative for A.F.B. by culture.
   (e) Evidence of old pleurisy, and with no parenchymatous lesion—1 case (4·2%)

6. *Skeletal tuberculosis associated with disease in more than one system* :
   (a) Pulmonary lesion and involvement of the lymph glands (cervical and inguinal group)—2 cases (8·4%)
   (b) Pulmonary lesion and involvement of the genito-urinary tract (the urine being positive for *M. tuberculosis* by culture)—1 case (4·2%)

The lung lesions in these cases were of the post-primary type.

7. *Cold abscess (paravertebral, in some cases and psoas in others)*—17 cases (70·8%)

   Of these 11 showed clinical manifestations, the rest had no signs or symptoms, but was diagnosed after x-ray examination. The aspirated pus was positive for A.F.B. by smear examination in 5 cases (20·8 per cent) and positive by culture in 4 cases.

8. *Skeletal tuberculosis associated with pulmonary lesion*:

   (a) Cases where osteoarticular lesions appeared later than the pulmonary lesion—10 cases (41·7%)

   (b) Cases where the skeletal and the lung lesions were detected simultaneously—4 cases (16·7%)

   (c) Cases where the lung lesions were detected after the patients had skeletal lesions of some duration—10 cases (41·7%)

9. *Time interval between the appearance of the two varieties of the disease*:

   (a) In less than one year—6 cases (25%)

   (b) Between one and three years—9 cases (37·5%)

   (c) In more than three years but within 5 years—9 cases (37·5%)

   No history of any local trauma was available in any of the cases.

10. *Bacteriological status of sputum when the skeletal tuberculosis was diagnosed*:

    (a) Negative for A.F.B. (by smear)—22 cases (91·6%)

    (b) Positive for A.F.B. (by smear)—2 cases (8·3%)

    The positive sputum, aspirated pus, and pleural fluid from these cases were cultured for A.F.B. and whenever there was growth of A.F.B. the cultural characters were found to be *M. tuberculosis* (human type). Animal inoculation could not be done.

11. *Summary of treatment*:

    (a) Chemotherapy only, with all three drugs (streptomycin, INH, and PAS)—2 cases (8·3%)

    (b) Chemotherapy combined with immobilisation (plaster bed, plaster jacket, and drainage of cold abscess)—17 cases (70·9%)

    (c) Chemotherapy and drainage of the cold abscess but no immobilisation—2 cases (8·3%)

    (d) Chemotherapy and immobilisation and later on fusion operation—3 cases (12·5%)

    The average duration of chemotherapy was two years.

Treatment

Treatment of skeletal tuberculosis demands a thorough search for any active lesion in any other part of the body, particularly in the lungs, lymph glands, and genito-urinary tract. Often there may not be any overt lesion. But cases with high fever and signs of toxaemia, suggest the presence of active lesion in some part of the body. The presence of a sinus and superadded secondary infection in skeletal tuberculosis may also give rise to high fever and toxaemia. However local treatment of the involved bone and joints requires special methods of treatment, e.g. splintage, plastering, and various kinds of surgical operation. These should always be done under the supervision of an orthopaedic surgeon.

Constitutional treatment is the most fundamental one. It should be borne in mind that the skeletal disease is a local manifestation of a general infection. Attention should be paid to the maintenance of general resistance of the patient, with proper diet, rest and other supportive measures. Anti-tuberculous drugs are of the utmost value in the treatment of bone and joint tuberculosis. Some cases may recover without leaving any deformity, provided the diagnosis has not been made too late and destruction of the bones and joints have not set in. Chemotherapy alone has given encouraging results in a good number of cases (Stevenson, 1957). In the present series, 16·6 per cent of cases became stable with chemotherapy alone. Chemotherapy includes three drugs (streptomycin, INH and PAS). This treatment should be prolonged, adequate, and intensive. The average duration of chemotherapy in this series was for a period of two years. The clinical sensitivity of the patient appears to be more important than the sensitivity status of the tubercle bacilli as reported from the laboratory.

It was noted with interest in this series that with chemotherapy alone, the pulmonary lesions in all the cases became 'closed and quiescent' along with the skeletal lesions, which also became stable and ultimately healed, and none of the cases required any collapse therapy or surgical treatment for their lung condition.

Chemotherapy has opened up a new era for surgery in tuberculosis. With this either alone or in combination with surgery, where indicated, it has been possible to have:

1. Resolution of infection, if diagnosis has been made at an early stage, leaving slight or no deformity, and good restoration of movements of the affected joints.
2. Direct and safe surgical attack on the diseased area.
3. Shortened time interval in the healing of the disease.
4. Immediate arrest of the progress of the disease, and thus many limbs which would require to be sacrificed formerly, can now be saved.

Discussion

Studies of large series of cases have demonstrated that skeletal tuberculosis may occur in a fair percentage of cases as secondary to pulmonary

tuberculosis. 41·7 per cent cases in this series were considered to be secondary to pulmonary lesions, and 16·7 per cent cases were found to have been involved almost simultaneously with pulmonary lesions. No age group is particularly vulnerable to this disease. Females have been found to be affected more in this series (66·6 per cent).

Skeletal tuberculosis occurring in association with pulmonary tuberculosis, affects the spinal column more than any other region. 79·2 per cent of cases of this series belonged to this group. The cause for such predilection is not known. Some workers attribute the association of pleural lymphatics with the spinal lymphatics, to be one of the causes for this, but this requires further corroboration. Dorsolumbar region of the spine is said to be most commonly affected. In this series 15·8 per cent of cases belonged to this group, whereas 47·3 per cent of cases had imvolvement of the lumbar spine. In a series of 500 cases Mann (1946) showed that 40 per cent of skeletal tuberculosis occurred as a result of haematogenous spread. In this series only one case was found to have miliary disease in the lungs (4·2 per cent). Skeletal tuberculous cases are often found with enlarged lymph glands of some groups, or generalised enlargement of the lymph glands. In this series only two cases had enlarged lymph glands, one in the axilla, and the other in the neck. 33·3 per cent cases of this series had frank cavities in the lungs, and 8·3 per cent of cases had sputum positive for A.F.B. Involvement of the bones and joints does not always occur when the pulmonary lesions are in the active state. 37·5 per cent of the cases in this series developed bone and joint tuberculosis within a period of 1 to 3 years after the lung lesions were considered as 'closed and quiescent'. 37·5 per cent of the cases developed bone and joint lesions within a period of 3 to 5 years after the disease was considered as 'closed, quiescent, or arrested'. 41·7 per cent of the cases in this series had pulmonary tuberculosis, following disease in the bones and joints. This may be due to the fact that the lung lesions were not diagnosed earlier.

In any locality, the incidence of skeletal tuberculosis depends to a large extent on the prevalence of cases suffering from pulmonary tuberculosis, and the preventive measures for the latter would be of positive help in minimising the incidence of the former. All the cases in the series were adolescents or adults and the pulmonary lesions were of the post-primary type,

We have a large number of cases of pulmonary tuberculosis in this country. It is, therefore, quite natural to find a large number of cases suffering from bone and joint tuberculosis, if proper investigations are carried out in this direction. These cases are wrongly labelled with various names. Due to the difficulty in diagnosing them at the early stage. After surveying a large series of orthopaedic cases Mookherjee (1958) has shown that 20 per cent of these were of tuberculous origin.

Summary

A general discussion with aetiology, pathology, and diagnosis of osteo-articular tuberculosis has been made. Pulmonary tuberculosis as a source of infection for this type of disease has been discussed.

A series of 24 cases associated with pulmonary tuberculosis has been reviewed, noting down some of the salient features.

Importance of chemotherapy in the treatment of skeletal tuberculosis has been stressed.

Acknowledgment

My grateful thanks are due to the Superintendent, Kanchrapara T.B. Hospital, and the D.H.S., West Bengal, for kindly allowing me to go through the records of the cases, and my sincere gratitude to my colleagues who have helped me in this review, and to Dr. G. S. Karai, Hony. Thoracic Surgeon, Kanchrapara T.B. Hospital for his kind advice and guidance.

References

Mann, K. J.—*Lancet*, **2** : 744, 1946.
Mercer, W.—*Orthopaedic Surgery*, 1952, Arnold, London.
Mookherjee, B.—*J. Indian M. A.*, **26** : 453, 1956.
Idem—Indian J. Tuberc., **5** : 35, 1958.
Stevenson, F. H.—*Tubercle*, **37** : 355, 1957.

A SHORT-TERM CLINICAL TRIAL WITH A COMBINATION OF INH AND PAS IN THE TREATMENT OF TUBERCULOSIS IN INFANTS AND CHILDREN

K. J. VYAS, M.B.B.S., D.C.H., D.PED.

Porbandar (Saurashtra)

Introduction

Tuberculosis in all age-groups has become one of the leading public health problems of today. Chemotherapy is used for the control of this disease as it renders the patient non-infectious. The treatment has to be a prolonged one and needs adjustment according to the economic condition of the patient. As the number of beds in sanatoria, hospitals and tuberculosis centres is insufficient for the large number of cases suffering from the disease, domiciliary treatment has much to recommend. Besides, simple, easy to administer and inexpensive forms of treatment have to be devised,

especially for the poorer section of the community. Although recent trials with prolonged use of INH alone in the treatment of tuberculosis have given encouraging results, majority of workers does not recommend the use of INH alone, for fear of emergence of resistant variants of tubercle bacilli. It is recommended that INH should always be used in combination with some other antituberculous drug or drugs, to inhibit the production of resistant strains of tubercle bacilli by exposing the bacilli simultaneously to two or more drugs having different modes of action. One such combination is that of INH and PAS.

The aim of this study was to undertake a short-term clinical trial with a combination of INH and PAS (isopar) in various forms of tuberculosis in infants and children, and to evaluate its efficacy.

Material and Method

Thirty infants and children were taken for this study. No special selection of the cases was made. The diagnosis of tuberculosis was established mainly by clinical examination with the help of the skiagram of the chest in cases of pulmonary involvement, and by C.S.F. examination in cases of meningeal involvement. All the cases gave a positive Mantoux (with 1 : 5,000 strength) reaction. The E.S.R. estimations and routine blood examinations were done and records of body weight were kept at the beginning and at the end of treatment. Response was judged from improvement in the general health and clinical condition, change in the skiagram of the chest, gain in body weight, lowering of E.S.R. and improvement in C.S.F. pathology in cases of tuberculous meningitis, after the termination of treatment.

To infants between 6 and 11 months of age, 4 tablets of isopar were given in two equally divided doses ; to children between 1-5 years of age, 6-8 tablets were given in three or four equally divided doses ; to children between 6-9 years of age, 8 tablets were given daily in four equally divided doses, and to children 11 years old, 10 tablets were given in four equally divided doses. The tablets were crushed and powdered and given in water. Each tablet of isopar contains 100 mg. of INH and PAS compound.

The minimum and maximum periods of treatment were 7 and 90 days respectively (Table 1).

The age distribution of the patients is shown in Table 2.

The frequency distribution of the types of the disease is shown in Table 3.

The radiographic findings in cases with pulmonary lesions are given below :

(A) In all cases with primary tuberculosis, there was marked enlargement of the hilar shadow.

Table 1—Showing an Analysis of the Duration of Treatment

Duration of treatment	No. of cases
7 days	2
10 ,,	4
15 ,,	2
20 ,,	3
30 ,,	4
32—40 ,,	7
44—50 ,,	2
60—70 ,,	4
80—90 ,,	2

Table 2—Showing Age Distribution of Patients

Age	No of cases
6—11 months	4
1—2 years	4
3—5 ,,	14
6—8 ,,	3
9—11 ,,	5

Table 3—Showing Distribution of Cases according to Types of Infection

Types of infection	No. of cases
Primary tuberculosis of the lung	11
Progressive and/or complicated tuberculosis of the lung	10
Primary tuberculosis of the lung and tuberculosis of the abdomen	4
Progressive tuberculosis of the lung and tuberculosis of the abdomen	2
Tuberculosis of the abdomen	1
Tuberculous meningitis	2

(B) In 12 cases with progressive and/or complicated pulmonary tuberculosis, with or without abdominal involvement, the findings were : (*a*) Right hilar shadows + + +. Right-sided bronchial compression and an area of atelectasis of the right lower lobe. (*b*) Infiltration of left upper and middle lobes with a cavity. (*c*) Infiltration of left middle and lower lobes. (*d*) Infiltration of right middle lobe. (*e*) Left hilar shadow + + +. Infiltration of left middle lobe and an area of atelectasis of left upper lobe. (*f*) Infiltration of both middle lobes. (*g*) Infiltration of right upper lobe. (*h*) Bilateral extensive infiltration with a cavity in right middle lobe. (*i*) Extensive bilateral infiltration in four cases.

Observations

Out of 30 cases, 24 showed slight to moderate improvement. In 4 cases the drug had no effect. One case expired and in one case the drug had to be withdrawn due to its toxic effect.

The child that expired was aged 5 and was an advanced case of tuberculosis with bilateral pulmonary infiltrations with a cavity. Isopar given daily for a week had no effect whatsoever.

In another child aged 9, suffering from tuberculosis of the lung and abdomen, the drug had to be withdrawn because of haemorrhagic toxic effect. This child was put on 8 tablets of the drug daily. On the third day of treatment he had bleeding from the mouth and ears and scattered purpuric spots appeared in the skin all over the body. On the fourth day the bleeding continued and fresh purpuric spots appeared. The drug was withdrawn on the fifth day. The platelet count was 120,000 per c.mm. The bleeding and clotting times were within normal limits. The bleeding became much less and no new spots developed on the sixth and seventh days. The drug was restarted on the eighth day. On the eleventh day the child had severe haematemesis with development of a fresh crop of purpuric spots. The drug was ultimately stopped and a different line of treatment was adopted.

Four cases did not show any improvement. Some details of these cases are given below:

1. An infant, aged 7 months, had active primary tuberculosis of the lungs. His nutritional status was very poor. He showed signs of marked protein deficiency. On the 20th day of treatment the child developed signs of tuberculous meningitis and the line of treatment had to be changed.

2. Another infant, aged 1 year and suffering from primary tuberculosis of the lungs, showed gradual improvement, but all of a sudden on the 40th day of treatment she developed a picture of tuberculous meningitis.

3. An infant, aged 10 months, had progressive tuberculosis of lungs and abdomen. His nutritional status was poor. Treatment with 4 tablets of the drug daily for 8 days had no effect and the infant's condition became worse. Hence the drug was discontinued and another line of treatment was adopted.

4. A child, aged 4 years, had chronic diarrhoea with an advanced stage of tuberculosis of the abdomen. Repeated stool examinations did not reveal any other cause of the diarrhoea. Treatment for 15 days with isopar had no effect on the disease, and hence the drug was discontinued.

In all the 24 cases, except six cases mentioned above, that improved, the temperature came down to normal within 8-17 days. In the other six cases, the temperature, after touching the normal level, continued to be irregular in character for a varying length of time. In three such cases the temperature became normal on 8th, 12th and 14th day respectively but showed evening and/or night rise for a week more. In the fourth case the temperature became normal on the 6th day of treatment but an evening rise was recorded every day till the 22nd day of treatment. In the 5th and 6th cases the temperature became normal on 9th and 12th days respectively, but continued to be irregular for 17 and 32 days respectively.

Comments

Chemotherapy is at present the chief weapon in our fight against tuberculosis in children. As such treatment has to be continued for quite a long time, the need for a suitable, effective and cheap method of treatment is necessary in a poor country like ours. Although combinations of antituberculous drugs, such as streptomycin plus INH plus PAS ; and streptomycin plus INH, are available, the combination of INH and PAS appears to be quite effective in the treatment of childhood tuberculosis. 80 per cent of cases in this series showed improvement on a short-term clinical trial. A long-term trial in a large number of cases is worthwhile for determining the exact efficacy of this combination in childhood tuberculosis. The combination of both the drugs in one tablet has the advantage of ensuring the administration of both the drugs. This type of oral treatment is especially suitable in places where medical facilities may not be easily available or in cases who cannot afford injections of streptomycin. Many parents dislike the idea of daily injections to the child, despite persuasions and explanations about the advantages of such injections. In these cases an oral combination is the next best treatment we can prescribe. The advantages of this type of treatment are its cheapness, the ease of administration, avoidance of the cost of streptomycin injections, and elimination of physical and mental trauma from injections of streptomycin to young infants and children.

The failure of the drug to produce beneficial effect in the course of the disease or to prevent complications of the disease in 6 cases in this series, leads us to comment on some points of importance. In hyperacute or active advanced cases the drug does not appear to be very effective, as one case expired, another had further deterioration in his clinical condition, and the rest of the cases showed only slight improvement. The drug has to be employed very cautiously in infants with poor nutrition and below the age of

one year, as two such cases in this series developed complication of tuberculous meningitis during the course of treatment. In the early stage of tuberculous meningitis in two children of the older age-group, the drug proved quite effective and therefore we may safely employ this type of combination in the treament of early stage of tuberculous meningitis in older children only.

SUMMARY

Thirty unselected infants and children, suffering from various types of tuberculosis, were treated for a short-term with a combination of INH and PAS in order to evaluate the efficacy. 24 cases showed slight to moderate improvement in their clinical condition. The drug should be cautiously used in infants below the age of one year and in active and advanced cases of childhood tuberculosis. In one case the drug caused a haemorrhagic toxic effect.

PRACTITIONERS' SERIES

VERTIGO

G. NARSING RAO, M.R.C.P. (EDIN.)

Lecturer in Medicine, Gandhi Medical College and Physician, K. E. M. Hospital Secunderabad

Vertigo literally means a sense of rotation. But in common usage it is used in a wider sense to imply a sense of movement of any sort, a disorientation of body in space. When patients complain that they are suffering from dizziness or giddiness they generally mean the same thing as vertigo. Either the subject or the surrounding objects seem to rotate, or a sense of movement may be felt only within the head. But a sense of rotation need not be present in every case of vertigo. Other types of movement may be felt, as for example the ground may seem to rock beneath the subject or may appear to rush up towards him or the floor and the sky may seem to meet.

A careful and complete history is essential for proper diagnosis. Vertigo is not just a 'black out', a fainting spell, a queer or a sick feeling, lightheadedness or staggering. A sense of movement is always elicited on direct questioning of the patients. Rarely, a patient showing all the features of vertigo with its characteristic accompaniments, does not complain of movements of any sort.

If vertigo is sudden in onset, the patient may fall to the ground, staggering about like a drunken man. If it is more abrupt he may go down like a log of wood. In other cases he may just go down on his knees. Usually he clutches at some object to prevent himself from falling. He may close his eyes in an attempt to shut off the false impressions of movement.

Vertigo is a symptom that generally alarms the patient and occasionally baffles the doctor. It is frequently associated with nausea, vomiting, pallor, sweating and tachycardia, and rarely diarrhoea may follow. Sweating and a feeling of weakness are the most constant symptoms. Nausea is always present in severe cases. Severity of vertigo is no indication of the severity of the underlying lesion.

Majority of cases of vertigo can be handled by the general practitioner. Only a few with special features require the opinion of and investigations by the specialist.

AETIOLOGY

For clinical purposes vertigo may be considered under the following heads:

1. *Arising out of labyrinthine lesions*—Meniere's syndrome. Labyrinthitis. Otosclerosis, cholesteatoma. Benign postural vertigo. Motion sickness.

2. *Arising out of VIII nerve lesion*—Acoustic neuroma, and cerebellopontine angle tumours. ? Vestibular neuronitis. Herpes of vestibular ganglion. Syphilitic basal meningitis.

3. *Arising out of vestibular nuclei lesions*—Posterior inferior cerebellar artery thrombosis. Anterior inferior cerebellar artery thrombosis.

4. *Arising out of vestibular pathways lesions (brain stem and cerebellum)*—Disseminated sclerosis. Syringobulbia. Brun's syndrome. Thrombosis of superior cerebellar artery. Aneurysm of vertebral artery. Basilar artery insufficiency.

5. *Arising out of cerebral hemispheres involvement lesions*—Migraine, epilepsy. Acute brain abscess (associated labyrinthitis). Encephalitis (associated brain stem lesion). Meningitis (associated labyrinthitis). Subarachnoid haemorrhage. Raised intracranial pressure (raised labyrinthine pressure). Thrombosis of cerebral arteries. Aneurysm of middle cerebral artery, etc.

6. *Induced by drugs* especially streptomycin and nicotine.

7. *Traumatic (head injury).*

8. *Ocular (associated with diplopia)*—Paralysis of extra-ocular muscles. Muscle imbalance due to myopia or astigmatism.

9. *Psychogenic.*

10. *Miscellaneous conditions*—Severe anaemia. Cardiac insufficiency. Arteriosclerosis. Hypertension. Leukaemia. Purpura.

Types of Vertigo

Between attacks the patient may be free from vertigo, but sometimes a patient may feel a more or less continuous state of imbalance.

Four types of vertigo are encountered in daily practice, viz., (a) Paroxysmal vertigo ; (b) Postural or positional vertigo ; (c) Persistent vertigo ; (d) Transient fleeting vertigo.

As a rule persistent and continuous vertigo is in favour of a central lesion—a lesion involving vestibular pathways. But vertigo may last several days or even weeks in cases of sudden and complete vestibular failure, as in vestibular neuronitis or haemorrhage into the labyrinth.

Change of position may make an attack of vertigo worse, but certain types of vertigo occur only when the patient assumes a particular position, such as lying down. Vertigo can always be produced in these conditions along with nystagmus in the critical position. The two conditions in which this type of vertigo is seen are (1) benign postural vertigo, and (2) Brun's syndrome (tumour or cyst of the third or the fourth ventricle). In the former the response to repetition shows fatigue effect, that is on repeatedly assuming the critical position nystagmus and vertigo become less and less marked and finally disappear. In the latter condition this does not happen. As the name suggests 'benign postural vertigo' is a benign and self-limited condition which is supposed to be caused by dysfunction of the utricle of one side. In Brun's syndrome paroxysmal vertigo develops on change of posture, usually on extending the head, and so a fixation or splinting of the head in flexion anteriorly or laterally may be seen. Headache is usually associated with it and evidence of raised intracranial tension may be seen on examination of the fundus, on x-ray of the skull or recording the C.S.F. pressure.

Paroxysmal vertigo lasting for short periods of time is generally in favour of a peripheral lesion. Loss of consciousness is rare in vertigo caused by peripheral lesions and therefore it raises the possibility of epilepsy. In epilepsy vertigo does not persist after the regaining of the consciousness, and a history of epileptic attacks without associated vertigo may be present ; while in vertigo of peripheral origin, a history of previous attacks without loss of consciousness may be present. Vertigo may occur in epilepsy as an aura of *grand mal* or it may be associated only with loss of consciousness (temporal lobe seizure).

History

While eliciting history the following questions should be be asked :

How and when did the vertigo first appear?
Is it recurring and if so, how often?
How long does the attack last?
In what position does vertigo appear or become worse?
Is it associated with loss of consciousness?
Is aural discharge, tinnitus or deafness present?
Is headache associated with it and is it persistent?
Is there any distortion of hearing?
Is there marked fluctuation of hearing?
Is there a recent history of head injury, or consumption of certain drugs, viz. : streptomycin injections, heavy smoking, alcoholic bout, use of anticonvulsive drugs etc.

An aural discharge in association with vertigo suggests the possibility of mastoiditis with perilabyrinthitis and possibly an erosion of bony-labyrinth. Distortion of hearing such as excessive sensitiveness to loud sounds, marked fluctuation of hearing, worse during attacks and improving during intervals, and perceptive deafness mainly or only for low tones are characteristic of Meniere's disease.

Tinnitus and deafness in association with vertigo are found also in labyrinthitis and eighth-nerve lesions. Persistent headache is in favour of a space-occupying lesion in the cranial cavity.

Examination

Physical examination in a case of vertigo generally does not reveal much. But it is essential to examine the eyes, ears, central nervous system and cardiovascular system. Examination of urine, blood, W. R. or Kahn tests, x-ray of the skull and C.S.F. examination may be necessary. Audiometry and caloric tests prove helpful in a very small number of cases. Rarely, carotid or vertebral angiography and electroencephalography may have to be done to arrive at a diagnosis.

The eyes should be examined for squint and diplopia ; but examination of vision for myopia or astigmatism is hardly ever found necessary. Examination for nystagmus should always be done, but it is generally not very helpful, for it need not be present in all cases of vertigo. Horizontal nystagmus which is the one most commonly found, does not help in differential diagnosis. Horizontal rotary nystagmus is in favour of a labyrinthine lesion and a vertical nystagmus is in favour of a brain-stem lesion.

The ears should be examined for any perforation of the tympanic membrane and for herpetic vesicles in the ears. Wax in the ear and blockage of the eustachian-tube by themselves have never been convincingly proved to cause vertigo. Per-

foration in the attic region or at the posterior margin of the tympanum is likely to be associated with cholesteatoma with possible erosion of the lateral semicircular canal or with brain abscess. When there is erosion of the bone surrounding the internal ear, pressing the tragus sharply into the meatus may produce nystamus (fistula test).

Clinical Features in Different Types of Vertigo

Ramsay Hunt syndrome—It is an uncommon condition. It is essentially a geniculate ganglionitis giving rise to herpetic vesicles in the ear and facial palsy on the same side. In this condition the spiral ganglion of the cochlea and vestibular ganglion are commonly affected, giving rise to vertigo and cochlear symptoms. Herpes of vestibular ganglion has also been described to occur in isolation, without involving the facial nerve.

Labyrinthitis—It is generally caused by extension of purulent infection from the middle ear in acute or chronic otitis media. In meningitis, retrograde extension of infection may occur through the internal auditory meatus or by thrombophlebitis. Rarely, labyrinthitis may occur without any bacterial infection of the middle ear (acute serous labyrinthitis).

Fever and pain in the ear are generally present. Deafness, nausea and vomiting are associated with vertigo. Nystagmus and ataxia of limbs are found on examination. Nystagmus is horizontal or horizontal rotary. The patient lies on the healthy side and falls to the side of the lesion on trying to rise. In serious labyrinthitis some recovery of both cochlear and vestibular functions may occur.

Meniere's disease—It is a disease of middle age and in this condition recurrent episodes of vertigo occur, accompanied by tinnitus and deafness. In most instances they develop simultaneously. In the rest, one precedes the other, usually tinnitus precedes, but rarely vertigo may precede cochlear symptoms.

Prodromal symptoms may or may not be present. When present they consist of general malaise, light-headedness, increased sensitivity to noises and increase in tinnitus.

Deafness and tinnitus usually appear first in one ear and even when symptoms have become bilateral they tend to be more marked on one side. As the attacks continue deafness increases and as deafness increases vertigo subsides.

Attacks in Meniere's syndrome vary in severity, duration and frequency. Most attacks last for many minutes or hours or even for one or two days, though they may only be momentary. They occur at intervals which vary from a few hours to several years. Deafness for low tones and fluctuations in severity and excessive sensitiveness to loud sounds differentiate Meniere's disease from all other causes of labyrinthine vertigo. Only when vertigo is the sole symptom, difficulty arises in diagnosis until cochlear symptoms appear.

Three syndromes resembling Meniere's disease have been described. All of them are rare. They are :

(a) Lermoyez syndrome—In this condition deafness appears first and is progressive. Then vertigo suddenly appears and deafness slowly improves. Recovery is slow.

(b) Cogan syndrome—It is a disease of young adults. Visual symptoms appear first. Photophobia, ocular pain, blepharospasm and then within a few hours to a few weeks tinnitus, bilateral progressive loss of hearing, vertigo, nausea and vomiting make their appearance. Interstitial keratitis appears early.

(c) Acoustic vestibular syndrome—It is a condition in which sudden and spontaneous loss or impairment of hearing occurs in a previously healthy ear, usually in association with vertigo, nausea, vomiting etc. This affects middle-aged people and is usually followed by incomplete recovery of hearing.

Vertigo due to acoustic neuroma—Vertigo may be transitory or may be severe and prolonged. Tinnitus with or without deafness is an early symptom. Corneal reflex on the affected side disappears early. Later diplopia, dysphagia, headache and unsteadiness on walking appear.

Vertigo due to vestibular neuronitis—In this condition cochlear function is not affected and vertigo lasts for weeks. Recovery takes place invariably in four to twelve weeks. It generally affects people aged thirty to fifty years. A very similar condition occurs in epidemics at times and is known as 'epidemic vertigo'. Probably these two conditions are one and the same. It is not known whether the lesion is in the vestibular nerve or in the vestibular nuclei. As regards aetiology virus has been implicated but none could be isolated so far from these cases.

Vertigo due to thrombosis of posterior inferior cerebellar artery—Transitory numbness of one side of the face may precede, but generally vertigo appears abruptly and patient may vomit. Dysphagia, hoarseness, loss of thermal and painful sensation on the face on the affected side and of the body on the opposite side, and loss of coordination on the side of lesion helps in the diagnosis.

Horner's syndrome—This may also be present.

Vertigo in disseminated sclerosis—Paroxysmal vertigo is not as common in this condition as episodes of less severe nature. When vertigo is the only symptom without any abnormal neuro-

logical findings, diagnosis can never be made with certainty. Definite diagnosis is only made provisionally. But it must be borne in mind that disseminated sclerosis is not commonly seen in this country and vertigo is never present in many cases of disseminated sclerosis.

Vertigo due to lesions of vestibular pathways—In cerebellar and brain stem tumours vertigo is caused by involvement of vestibular pathways. Vertigo of brain stem tumours is generally fleeting and mild. Vertical nystagmus always denotes a lesion in the brain stem.

Drug-induced vertigo—It is not clear whether streptomycin exerts its toxic effect on the labyrinth or the brain stem. Nicotine toxicity is not an uncommon cause of vertigo in sensitive subjects.

Traumatic vertigo—Vertigo caused by haemorrhage into the labyrinth follows immediately after injury and is severe and paroxysmal. It persists for varying periods with a history of recurring episodes for two to three weeks or longer. It may be followed by permanent deafness on the affected side with persistent tinnitus.

Postconcussional vertigo is only one of the many symptoms that the patient complains of. Headache and tired feeling are among the other complaints. Tinnitus and disturbance of hearing are generally absent. Vertigo is ill-defined and not paroxysmal. Its mechanism is not clear.

Head injury may damage the eighth nerve and possibly haemorrhage in the brain stem may also be a cause of postural vertigo after trauma.

Mild transient dizziness commonly occurs following cerebral concussion.

Psychogenic vertigo—This is a feeling of unsteadiness without actual loss of balance and without any sense of movement. It is a constant sensation that is complained of by patients suffering from anxiety states and neurosis in general.

Miscellaneous causes of vertigo—These are severe anaemia, cardiac insufficiency, arteriosclerosis, and hypertension. Vertigo is caused by hypoxia. It is mild and described as light headedness. It is induced by change of posture and generally appears on arising in the morning or lying down or bending over.

Persistent or recurring paroxysmal vertigo, aggravated by posture or movement, is not uncommon in hypertensives.

A vascular accident in hypertension may cause haemorrhage in the labyrinth or brain stem and cause sudden and severe vertigo which takes several days to pass off. Rarely, in leukaemia and purpura, haemorrhage may occur in the labyrinth or brain stem and cause sudden and severe vertigo.

Treatment

Wherever possible treatment should be directed to the cause. In self-limited conditions such as benign postural vertigo or vestibular neuronitis, reassurance and symptomatic treatment are all that are necessary.

In Meniere's disease which is otherwise known as hydrops of the labyrinth, the precise mechanism of hydrops and vertigo is ill understood. Various theories have been put forth and based on these, various types of treatment have been advocated and good results claimed for each one of them.

In the acute phase treatment is symptomatic. If the patient is unable to take an oral medicine, one of the following may prove effective: Morphine ¼ gr. with atropine 1/100 gr., luminal 3 gr., largactil 50 mg., or stemetil 12·5 mg. i.m. If oral medication is possible one of the following can be tried: stemetil 5-10 mg., largactil 25 mg., marzine 50 mg., dramamine 50 mg. or avomine 25 mg., thrice daily or benadryl 50 mg., 2-3 times daily.

Reassurance is essential in every case. Probably the best drug for routine treatment is phenobarbitone ½ gr. (0·035 g.), two to three times a day. Low salt diet with restriction of fluid intake is advised for reducing the frequency of attacks.

Ammonium chloride orally with a low salt diet is at present the most effective measure in preventing recurrences. Ammonium chloride is given in 10 gr. (0·65 g.) doses, twice daily. Potassium chloride in daily doses of 6 g. has also been advocated.

Vasodilators such as papaverine and nicotinic acid and stellate ganglion block have been advised without any improvement in the result. Antihistamines, histamine disphosphate injections, vitamin B-complex have all been claimed to be beneficial. None of these probably help. As the disease may show long spontaneous remissions it is difficult to assess the results of various lines of treatment.

In obstinate cases, streptomycin 3-6 g. daily for one to three weeks has been tried to damage the vestibular function completely, but the effect is unpredictable.

Surgical treatment is rarely resorted to in cases not responding well to medical treatment. Section of vestibular nerve is ideal but is a difficult operative procedure. Other operations done are (1) incision of saccus endolymphaticus, (2) injection of alcohol, or electrocoagulation of labyrinth, (3) labyrinthectomy (removal of portion of membranous external semicircular canal).

JOURNAL OF THE
INDIAN MEDICAL ASSOCIATION
CALCUTTA, FEBRUARY 16, 1961

ISONIAZID AND PAS COMPOUND

Elsewhere in this issue appears an article[1] 'A short-term clinical trial with a combination of INH and PAS in the treatment of tuberculosis in infants and children'. The article is an example of the light-hearted manner in which clinical trials are sometimes conducted on dangerously ill patients with new drugs of doubtful value in place of available drugs with well established efficacy. It is also an example of hasty conclusions drawn without scientific and logical analysis of facts.

Success in the treatment of tuberculosis with well known drugs like streptomycin, INH, and PAS has been so consistent and remarkable that it is now considered unethical to treat any patient with tuberculosis for the first time with any drug other than any two of these drugs in combination[2]. Clegg[3], who conducted the first clinical trial with the new compound isoniazid salt of PAS selected only those patients who were previously treated with various combinations of streptomycin, PAS and isoniazid without success, as he considered it unethical to try it on previously untreated cases.

All the 30 cases selected for treatment by the author[1] were below 12 years. Four of them were in the first year and another four between 1 and 2 years, a period considered to be the most dangerous for tuberculous infection. The multiple distribution of the lesions in the lungs, abdomen and meninges, and the statement on temperature showed that most of the cases were in the disseminative stage in the evolution of tuberculosis in children and were febrile and acute. To use such material for therapeutic trial with a drug of doubtful value in preference to well-tried remedies is, to say the least, very unfortunate. In fact one child of 5 years with advanced bilateral tuberculosis died, and two infants in the first year of life (out of 4 patients treated in this age-group) developed tuberculous meningitis during the course of the trial. Another child developed serious haemorrhagic complication.

The author has claimed 80 per cent improvement but no definite criteria of improvement were mentioned in his paper except control of temperature within 8 to 17 days in 18 cases. Of the 24 cases who 'improved', only 8 were treated for more than 6 weeks, 6 for less than 3 weeks and 3 for less than 2 weeks. Two cases of meningitis were also included in the improved list, but the duration of treatment and the evidences of improvement were not mentioned. In tuberculosis results of treatment are judged on certain standard criteria and in therapeutic trials a control period is always necessary to avoid the possibility of improvement spontaneously or with rest and general measures. Judging the therapeutic efficacy of a drug in tuberculosis in cases treated only for 2 or 3 weeks is indiscreet to the extreme.

The author appears to be ignorant of the scientific facts about this drug isopar (a chemical compound of isoniazid and PAS) already published in easily available literature. If he had cared to look into the literature he would have hesitated to use this drug in his previously untreated patients. This drug was put into the market and offered to the medical profession by some pharmaceutical firms before enough was known about it. Although experts in tuberculosis were cautious enough to use it only in chronic resistant cases, some less informed members of the medical profession were led into the belief that this drug offered a cheap and convenient method of using combined PAS and INH therapy. That this was not so has been established by careful and controlled studies.

The isoniazid salt of P-aminosalicylic acid is an additive compound of PAS and INH in equimolecular proportion (1 : 1) and is known in England as dipasic which is presumably the same as isopar used by the author[1]. This compound was shown to have anti-tuberculous activity *in vitro*[4] and *in vivo* in animals[5]. This was confirmed later by some other workers. The chief interest in the compound (dipasic) to a clinician was to know whether it was clinically effective in human tuberculosis. But before this, two questions required to be answered, namely, whether the compound acted as an independent chemical substance in the body, or it was broken down in the body into its components INH and PAS and acted by virtue of these elements. In either event it was also necessary to know whether tubercle bacilli sensitive to the drug (dipasic) would become resistant to INH, PAS or to dipasic itself. Walker *et al*[6] from a critical study of the literature on these points and from their own work showed that dipasic has no anti-tuberculous action independent of its PAS and INH content, either *in vitro* or *in vivo*. Some

[1] VYAS, K. J.—*J. Indian M. A.*, **36** :, 149, 1961.
[2] CROFTON, J.—*Brit. M. J.*, **2** : 449, 1960.
[3] CLEGG, J. W.—*Ibid*, **2** : 1004, 1955.
[4] WILDER SMITH, A. B. AND WIEDERKEHR, F. X.—*Praxis*, **42** : 884, 1953.
[5] AUFDERMAUR, M. AND BRODHAGE, H.—*Ibid*, **42** : 885, 1953.
[6] WALKER, W. C., HAY, D., STEWART, SHIELA M. AND CROFTON, J. W.—*Tubercle*, **38** : 238, 1957.

workers[5, 7, 8, 9, 10, 11] reported that isoniazid-resistant strains of *M. tuberculosis* were fairly sensitive to dipasic. In many of these reports the PAS sensitivity of the strains was not stated. The PAS content of dipasic may inhibit *in vitro* isoniazid-resistant strains of *M. tuberculosis* which are sensitive to PAS and cause them to appear as sensitive to dipasic. Thus in Clegg's[5] series of the five strains of *M. tuberculosis* fully resistant to isoniazid, 4 were sensitive and one partially resistant to dipasic, but all these five strains were sensitive to PAS. Dunbar and Ritchie[12] tested 16 strains of *M. tuberculosis* of which all 16 were resistant to INH (one partially) and 12 were resistant to PAS (one partially), for sensitivity to dipasic. They found that 14 strains were resistant to dipasic (4 partially). Walker *et al*[8] also found that organisms fully resistant to both INH and PAS were also resistant to dipasic.

In clinical trials, no control studies have so far been carried out. As most workers are reluctant to use a new drug alone in previously untreated patients reports of such treatment are few. Allan *et al*[13] treated 22 previously untreated patients with dipasic alone and found that clinical improvement and resolution of non-cavitary lesions were comparable to a combined therapy with INH and PAS but cavity closure and sputum conversion were poor. Dipasic was given in a daily dose of 1·2 g. (the usual dose of dipasic recommended is 600 mg. daily), which provided 600 mg. of INH and 600 mg. of PAS daily. As this small amount of PAS is known to have very little therapeutic effect the clinical results can be ascribed to the INH portion of dipasic. In Clegg's[5] series of 17 patients (all previously treated with other drugs), 10 had bacilli-sensitive and 7 resistant to INH and 16 sensitive to PAS. Sputum conversion after 3 months' treatment with dipasic occurred in 6 cases, all of which had initially organism sensitive to INH. Walker *et al*[8] treated 11 patients with dipasic (500 to 600 mg. daily) of whom 10 had tubercle bacilli resistant to both PAS and INH before treatment. There was no obvious clinical effect and bacteriological studies did not show any effect on the bacterial population. They concluded therefore that there was no reason to believe that dipasic acted clinically in any way differently from isoniazid alone, the PAS content being too small for any therapeutic effect.

Although isoniazid alone has a very strong antituberculous activity the greatest disadvantage of using it alone clinically is development of drug resistance and the merit of combined therapy with two drugs such as PAS and isoniazid, is in delaying or preventing this drug resistance. When PAS is used in combination therapy with either streptomycin or INH, it has to be given in daily dose of 12 to 20 g. to prevent development of streptomycin or isoniazid resistance. A dose of 5 g. of PAS daily has been found to be inadequate for this purpose (Medical Research Council of Great Britain trials). The small amount of PAS available in the daily dose of dipasic is therefore unlikely to be able to prevent emergence of isoniazid-resistant organisms.

Information available from the literature also supports this belief. In Clegg's[5] series, sputum of 4 patients out of 10 with initial isoniazid sensitive organisms remained positive after 12 weeks' treatment with dipasic and in 2 of these the organisms became isoniazid resistant. Schaubb[10] also found that all 4 patients with isoniazid sensitive organisms developed isoniazid resistant strains under dipasic treatment. Bohlke and Schoeps[11] on the other hand suggested that dipasic prevented or delayed development of isoniazid resistance although their evidence was not sufficient. Allan *et al*[13] in their 22 patients treated with dipasic had 17 positive culture of isoniazid sensitive organism in sputum before treatment. After 3 months 9 patients and after 6 months 8 patients still had positive culture from sputum. Five of these cultures were already isoniazid-resistant at 3 months.

According to the *Lancet*[14] dipasic has no advantage over isoniazid. It cannot safely be given alone and there seems to be no justification for using it in preference to isoniazid and PAS.

P. K. CHATTERJEE

[7] BRODHAGE, H.—*Science*, **120** : 998, 1954.
[8] KOURILSKY, R., KOURILSKY, SIMONE AND MICONLAND, SUZANNE—*Therapie*, **9** : 273, 1954.
[9] KOURILSKY, R., KOURILSKY, SIMONE AND THUILLIER, Y.—*Sem. Hop. Paris*, **32** : 1948, 1956.
[10] SCHAUB, R.—*Beitr. Klin. Tuberk.*, **113** : 331, 1955.
[11] BOHLKE, F. AND SCHOEPS, U.—*Ibid*, **115** : 145, 1956.
[12] DUNBAR, J. M. AND RITCHIE, R. T.—*Lancet*, **2** : 612, 1957.
[13] ALLAN, G. W., MCNAUGHT, W. AND LEES, A. W.—*Ibid*, **2** : 609, 1957.
[14] Annotation—*Ibid*, **2** : 629, 1957.

XXXVII ALL-INDIA MEDICAL CONFERENCE :: CALCUTTA :: MARCH 12-14, 1961

Members desirous of attending the 37th Session of the All-India Medical Conference to be held in Calcutta on March 12-14, 1961, will please contact the Organising Secretary at 67 Dharamtala Street, Calcutta 13.

— Details on page 171 —

GENERAL PRACTICE DIGEST

DIURETIC THERAPY IN CLINICAL PRACTICE

The treatment of the oedematous patient is one of the most challenging problems encountered in clinical practice. Whenever possible the treatment should be aimed at correcting the specific physiopathologic defect. But often this is not possible. In such cases the treatment should be directed at the secondary defect, i.e., the abnormal retention of salt and water. The diuretic drugs offer the most effective means of controlling excessive fluid and electrolyte accumulation.

The clinical conditions which are associated with oedema formation belong to five major categories. The commonest cause is cardiac oedema or congestive heart failure. Less frequent causes of oedema are renal disease (e.g. nephrotic syndrome and glumerulonephritis); premenstrual oedema and the odema of pregnancy; hepatic disorders (e.g. cirrhosis); and iatrogenic (i.e. steroid-induced oedema). Oedema may also be secondary to venous or lymphatic obstruction. Nutritional oedema is due to hypoproteinaemia and vitamin deficiencies.

Pharmacological Grouping of Diuretic Drugs

A large variety of diuretic drugs are at present available. They are discussed below in terms of their pharmacological grouping:

1. *Organomercurials*—These drugs probably inhibit sulphhydryl containing enzymes, which regulate the tubular reabsorption of sodium and chloride ions. The urinary loss of these ions results in an accompanying water diuresis. Mercurial absorption following subcutaneous and intramuscular injection is practically complete in 24 hours in patients with minimal oedema. The subsequent natriuresis parallels the urinary excretion of the mercurial. Thirty per cent or more of a parenterally administered mercurial is excreted in less than 6 hours. In severe congestive failure mercurial excretion after subcutaneous or intramuscular administration is somewhat delayed due to this poor circulation.

The oral mercurials are also effective diuretic agents when used in higher dose ranges. But gastro-intestinal disturbances limit their use. The most useful member of this group is chlormerodrin (neohydrin). The oral mercurials have recently been largely replaced by thiazide derivatives which are more potent and present less side reactions.

2. *Benzothiadiazine derivatives*—These drugs are most probably related to the inhibition of sodium and chloride reabsorption at the tubular level. The carbonic anhydrase inhibiting action of these drugs does not appear to be their primary mechanism.

The thiazides are rapidly absorbed from the gastro-intestinal tract and sodium excretion begins within 2 hours after oral administration. The diuretic activity lasts for approximately 12 hours. During diuresis following chlorothiazide there is no significant change in glomerular infiltration rate or renal plasma flow.

The onset of diuretic effect after hydrochlorothiazide occurs after the first hour and reaches a maximum in 3 hours. The duration of its activity is about 6 to 12 hours. Many more derivatives of thiazide are available.

3. *Xanthine and isocytosine derivatives*—The diuresis produced by xanthine diuretics (aminophyline etc.) are primarily due to a direct tubular effect. They inhibit those enzyme systems in the renal tubule necessary for reabsorption of sodium and chloride, and a secondary increase in water excretion results. The xanthine diuretics also have a stimulant action on the myocardium resulting in increased glomerular filtration and renal blood flow.

The isocytosine drugs are also effective oral diuretic in mild and moderate states of oedema. They have to be used intermittently compared to mercurial diuretics. The xanthines are poor in potency.

4. *Carbon anhydrase inhibitors*—These drugs are very effective in the management of mild to moderate oedema. Acetazolamide (diamox) is an important member of this group. The carbonic anhydrase inhibition blocks the exchange of hydrogen ions for sodium. These drugs have no significant effect on glomerular filtration or renal blood flow.

These drugs lose their natriuretic effect in three to four days, and cannot, therefore, be administered continuously. When given for treatment of heart failure, acetazolamide should be given for two or three successive days, and allowing at least two days between subsequent drug courses, or alternately, the drug can be given as a single dose every other day. Acidosis due to renal failure is a definite contra-indication to the use of carbonic anhydrase inhibitors.

5. *Spirolactones*—These drugs antagonise the electrolyte effects of aldosterone, as it acts competitively with aldosterone at the renal tubular level. It augments the diuretic effects of other agents. The drug is effective only in the presence of aldosteronism.

Clinical Uses

1. *Cardiac oedema*—In severe heart failure 2 ml. of a parenteral mercurial is given daily for 3 to 5 days until oedema has disappeared. After decompensation has improved, chlorothiazide may be administered in a dose of 1000 mg. every 12 hours; subsequently a maintenance dose of 500 to 1000 mg. of this drug will be found adequate.

Less severe heart failure, can be controlled by acetazolamide (250 mg.) given daily for 3 consecutive days of each week. Oral mercurial diuretics (neohydrin), 5 to 8 tablets daily, can also be given.

2. *Renal oedema*—In nephritic patients, chlorothiazide (500 to 1000 mg. twice daily) is very useful. Severe cases may require adrenal cortical steroid therapy.

In nephrotic syndrome, the thiazide group of drugs should be first given a trial. If this measure fails to control the oedema, ACTH or steroid therapy should be tried. If oedema is severe, parenteral mercurials may be used. If still there is no response to the above treatment, salt-poor albumin (100 g. intravenously, every other day) or spirolactones (100 mg. four times a day) may be tried.

3. *Premenstrual oedema and oedema of pregnancy*—Premenstrual oedema can be controlled by restriction of sodium, and administration of oral diuretics during the

last five to seven days of the menstrual cycle. Chlorothiazide, 500 mg. twice daily, or acetazolamide, 200 mg. daily is adequate.

In oedema of pregnancy, a low sodium diet with a thiazide derivative or a carbonic anhydrase inhibitor will control the abnormal fluid retention of toxaemia of pregnancy.

4. *Hepatic oedema*—The treatment of this condition initially consists of adequate dietary control, bed rest and diuretic therapy. Restriction of sodium is essential. A high protein intake is beneficial unless ammonia intoxication becomes clinically significant.

Parenteral mercuhydrin, 2 ml. given daily will produce marked natriuresis and diuresis. Dry weight may subsequently be maintained with 500 to 1000 mg. of chlorothiazide given daily. Occasionally the simultaneous use of mercurial diuretics and thiazide derivatives is more effective than either agent alone. In refractory cases, a combination of thiazide diuretic with adrenal cortical steroids or spironolactone (aldactone) may sometimes be effective.

5. *Iatrogenic oedema*—This results from chronic therapeutic administration of adrenal cortical steroids. This oedema can be controlled by discontinuation of steroid therapy, but it is frequently not feasible to do so. In such cases, sodium restriction plus diuretic therapy will control oedema formation. Thiazide derivatives (500 to 1000 mg. of chlorothiazide, twice daily) used alone or in combination with mercurials are usually adequate.

—From an article by R. Seller, A. N. Brest and J. H. Moyer, *J. Louisiana State M. Soc.*, **112** : 415, 1960.

CURRENT MEDICAL LITERATURE

Biguanide Derivatives in the Treatment of Diabetes Mellitus

MEHNERT, H. AND KRALL, L. P. (*German M. Monthly*, **5** : 225, 1960) from the Joslin Clinic and the New England Deaconess Hospital, Boston, Mass, and the Diabetic Out-Patient Clinic of the University Medical Policlinic, write :

Present-day knowledge of biguanides fails to explain their hypoglycaemic effect, which is independent of pancreatic function and stimulates anaerobic glycolysis. The hypoglycaemic effect is proportional to the dose administered. Concomitant gastro-intestinal side-effects associated with increasing dosage limit the use of biguanide therapy. Side-effects disappear when dosage is lowered or the drug is withdrawn. Biguanides are particularly useful in combination with insulin in labile diabetics, when they produce a stabilising effect, often lowering insulin dosage, and lessen the incidence of hypoglycaemic 'shock'. Biguanides alone, or in combination with a sulphanilylurea, may be successful in diabetics who are early or late sulphanilylurea 'failures'. Patients who respond adequately to diet alone or sulphanilylureas or insulin do not require biguanide therapy. A certain amount of insulin, endogenous or exogenous, is essential for successful biguanide usage.

Clinical Experiences with the Diuretic 1,3-Disulphonamide-6-Chlorobenzene

JACOB, R. (*German M. Monthly*, **5** : 300, 1960) from the Department of Internal Medicine, Katharinen Hospital, Stuttgart, writes :

1, 3-Disulphonamide-6-chlorobenzene, a new orally effective diuretic, was tested on 25 patients with water retention due to various causes. At a dosage of 250-500 mg., 15 out of 23 patients responded well, 4 only moderately, and the remainder only slightly or not at all. Lower doses were usually inadequate. The differences in the response to the drug could not be explained in all cases.

The drug was mainly effective in increasing sodium and chloride excretion but potassium losses must not be neglected when it is given for longer periods.

Tolerance to the drug was generally good. After excessive diuresis one woman complained of weakness and a hypertensive man was temporarily in a confused state. In one patient with decompensated cirrhosis of the liver the appearance of hepatic coma could possibly be ascribed to the drug. As for its mode of action, this substance appears to resemble the natriuretics of chlorothiazide and its derivatives.

Management of Massive Upper Gastro-intestinal Bleeding

MAGE, S. AND PAYSON, B. A. (*Surg. Gynec. & Obst.*, **111** : 12, 1960) from the Surgical Service, Beekman-Downtown Hospital, New York, give in the following lines the summary of their observations :

It is not possible to generalise with certainty as to whether it is preferable to admit patients with acute upper gastro-intestinal bleeding to the medical or surgical services, or as to which supervisory arrangement may provide the most efficient management. Much depends on the circumstances prevailing in any individual clinic and, particularly on the availability and application of those involved in any team arrangement. However, in an emergency clinic, it seems more reasonable to admit patients with acute serious bleeding to the surgical service.

It is well recognised that certain patients with peptic ulcer may succumb to haemorrhage despite all therapeutic efforts. It is quite evident from empiric experience that some of these patients may be saved by well-timed and proper surgery. On the basis of the existing pathology, this was the case in 4 out of 5 patients with exsanguinating bleeding and in 10 of the 18 with severe recurrent bleeding.

Two deaths resulted from surgical complications, e.g., cardiac arrest and efferent loop obstruction, in patients who conceivably might have recovered from the haemorrhages without surgical intervention. These facts emphasise that the inherent risks of operation cannot be overlooked in considering its use. It is for this reason that a policy of selective intervention by evaluating each case as an individual problem is favoured, rather than one of routine surgical intervention under certain specific conditions, as advocated by some.

Upon the basis of this experience as we believe that a patient with chronic peptic ulceration, whose condition becomes stabilised after serious bleeding, may be safely subjected to interval surgery sooner than was previously thought.

A correlation between the clinical manifestations of pain and the probable prevailing pathology has been found to be a serviceable therapeutic guide.

We believe our results with the treatment of bleeding peptic ulceration to be reasonably satisfactory, but since no acceptable basis for comparison exists it is impossible to evaluate them with the experience of others.

Our results with the treatment of bleeding varices remain frustrating and depressing, mainly because of the clinical material with which we are confronted.

Selective Surgery for Gastroduodenal Haemorrhage

DAVID, J. TIBBS (*Brit. M. J.*, **2** : 1346, 1960) from the University of Durham and Royal Victoria Infirmary, Newcastle upon Tyne, gives in the following lines the summary of his observations :

A group of 67 patients with gastroduodenal haemorrhage were selected for operation on the basis of the amount of blood transfusion already needed to maintain good condition and the presence of persistent or renewed haemorrhage after admission to hospital. This resulted in a reasonable compromise between unnecessary eagerness to operate and undue tardiness.

A defined policy of pre-operative transfusion to restore certain minimal clinical requirements and of arranging a set time for the operation was found to be both practical and satisfactory.

At operation the site of bleeding was demonstrated in all cases either by exterior evidence of peptic ulceration or by palpation and visualisation through a gastrotomy; in one case a second operation was necessary to accomplish this.

By gastrotomy it was found possible to detect the bleeding-point in virtually every case in which the bleeding was gastric or duodenal in origin. In several cases a bleeding gastric ulcer situated above the upper limits of the usual gastrectomy was found; a routine 'blind' gastrectomy might well have missed these lesions. It has been concluded that a blind gastrectomy is seldom necessary and is to be avoided, particularly in the presence of hiatus hernia or in patients with a history of melaena only.

The most effective methods of controlling the bleeding-point have been discussed and the necessity stressed for securing the bleeder in some fashion.

Long-term follow-up showed that it was possible, in most cases, to cure the condition causing haemorrhage.

The clinical picture of haemorrhage with a short dyspeptic history was found to be very suggestive of atrophic gastritis.

An overall mortality rate of 3 per cent was found for a group of 392 patients admitted for gastroduodenal haemorrhage and treated either medically or by surgery in cases selected by the criteria given.

Results of Treatment of Hypophyseal Tumours

DECKER, K. AND LAUTER, H. (*German M. Monthly*, **5** : 265, 1960) from the X-Ray Department of the Neurological Clinic, University of Munich, in giving a retrospective survey of the subject write :

Between 1946 and 1956, 103 patients with hypophyseal tumours were treated by either radiation or surgery. The findings on re-examination in the second part of 1958 are reported. Either method made it possible for about half of the treated patients to return eventually to full employment. The surgical mortality was 16 per cent; sequelae of radiotherapy developed in several patients, sometimes years later. In many patients of both treatment groups there occurred serious endocrinological and mental changes, which were however due to the patients' condition at the time treatment was begun, raher than to the consequence of treatment. The choice between surgical and radiation treatment depends largely on the degree of visual impairment, which may demand early surgical intervention.

Tetracycline Fluorescence in Bone Lesions

MCLEAVY, J. F. AND WALSKE, B. R. (*J. Bone & Jt. Surg.*, **42A** : 940, 1960) from the Department of Surgery, Creighton University School of Medicine, Omaha, write :

Tetracycline, administered intravenously, in divided doses of fifteen milligrams per kilogram of body weight per day for three or more days before operation, is deposited in bone lesions in such concentration that the malignant tissue will exhibit brilliant-yellow fluorescence under ultraviolet light in the operating room. This fluorescence can, therefore, be used in the detection and location of malignant tissue.

Rapidly growing bone also concentrates the tetracycline, but to a lesser degree.

In the malignant lesions that were studied in this series, the concentration of tetracycline was approximately six-fold greater than that in normal new bone. After the tetracycline is in the bone it maintains its fluorescence and bacteriostatic activity up to six months in specimens kept at −10 degrees centrigrade.

Tetracycline combined with radioactive iodine (I^{131}) may prove to be of diagnostic and therapeutic value for neoplasms, especially malignant conditions of bone.

Surgery of the Hand in Cerebral Palsy and the Swan-Neck Deformity

SWANSON, A. B. (*J. Bone & Jt. Surg.*, **42A** : 951, 1960) from the Orthopaedic Service, Blodgett Memorial and Mary Free Bed Children's Hospital and Orthopaedic Centre, Grand Rapids, writes :

There is a small group of patients with cerebral palsy who can be benefited by reconstructive surgery on the upper extremity, in addition to the usual therapeutic measures of splinting and muscle re-education. In cerebral palsy long-standing muscle imbalance, which can be improved only by surgical treatment, may prevent a hand from reaching its full potential for function.

A group of case reports is presented of patients on whom several selective procedures, including arthrodesis, tenodesis, and tendon transfers have been performed.

The intrinsic-plus or swan-neck deformity in cerebral palsy is described and illustrated with an analysis of the causative factors involved. It has been observed that the swan-neck deformity is caused by excessive tension on the middle band with relative relaxation of the lateral bands of the extensor mechanism. The tension on the middle band may come from the long extensors or from the intrinsics by way of their connection through the medial interosseous band or a combination of these forces. Prevention of the deformity is stressed and a method of surgical treatment is presented.

Prolonged Tourniquet Ischaemia of Extremities

PALETTA, F. X., WILLMAN, V. AND SHIP, A. G. (*J. Bone & Jt. Surg.*, **42A** : 945, 1960) from the Section on Plastic Surgery, Department of Surgery, St. Louis University School of Medicine, St. Louis, from an experimental study on dogs observe :

The effects of the application of a tourniquet for five hours to the hind limbs of anaesthetised dogs were studied under various conditions. The time required for the return of skin and muscle temperatures to normal after tourniquet ischemia was determined, as well as the degree of oedema at the site of the application of the tourniquet and the neuromuscular damage. Massive oedema and drop-foot were observed in untreated dogs after occlusion by the tourniquet for five hours. Heparin administered prior to tourniquet application, or just prior to tourniquet removal, afforded considerable amelioration of this damage, with a lessened degree of oedema that resolved earlier. Drop-foot was prevented, and the return of skin and muscle temperatures to normal levels was more rapid if heparin was administered.

Selective hypothermia afforded practically complete protection of the ischaemic limbs from the changes observed in the control animals. The explanation of these beneficial effects of heparin and hypothermia is not apparent, and further studies are in progress.

Eosinophilic Granuloma of Bone

MCGAVRAN, M. H. AND SPADY, H. A. (*J. Bone & Jt. Surg.*, **42A** : 979, 1960) from the Division of Surgical Pathology and Orthopaedic Surgery, Department of Surgery, Washington University School of Medicine, Barnes Hospital, St. Louis Children's Hospital, and the Barnard Free Skin and Cancer Hospital, St. Louis, give in the following lines the summary of their observation :

Twenty-eight cases of eosinophilic granuloma of bone in children and adults, all but one with symptomatically solitary lesions, are reported. The skull, femur, ribs, and mandible were the most frequent sites of involvement.

No diagnostic roentgenographic characteristics were found. Lesions of the flat bones were generally punched-out osteolytic lesions. Lesions of long bones were easily confused with malignant tumours. Biopsy is considered imperative to establish the diagnosis.

Transition of eosinophilic granuloma to Hand-Schuller-Christian disease or Abt-Letterer-Siwe syndrome has not been encountered in these cases and we have some doubts whether the reported cases of transition represent true changes from one form to another.

Therapy has included excision, curettage, small doses of irradiation, or nothing. Evaluation of any one form of treatment is impossible. All the lesions reported in this study healed regardless of the the therapy.

Meticulous microbiological studies of the tissue from these lesions seem indicated.

CURRENT TOPIC

MALNUTRITION AND FOOD HABITS*

In recent years, as the control of communicable disease has improved, the significance of malnutrition has emerged more clearly. The need to understand its causes has become urgent; without this understanding there can be no secure foundation for schemes of prevention.

It is now evident that in many countries, malnutrition is largely responsible for the high rate of mortality especially in children one to four years old. The combination of disease and malnutrition, the one precipitating and perpetuating the other, has a devastating effect in this age group.

Fortunately there is also evidence that improvements in nutrition (and in housing and hygiene) are more effective against the mortality of this older group than against the infant mortality. It is reasonable, therefore, to concentrate upon this group much of the resources of money and personnel that are available for public health work in nutrition.

Various forms of malnutrition as well as general undernourishment are found throughout the world. It has been amply demonstrated, however, by surveys carried out by national and international teams that the most serious and widespread deficiency disease found today is protein-calorie malnutrition in young children. This condition, a state of ill-health found where diets are habitually poor in protein while the calorie intake may vary from gross inadequacy to higher levels is known by different names in many parts of the world. The severe form incidentally, where protein is markedly deficient, is now generally referred to as Kwashiorkor—the name given to the syndrome when it was first described some twenty-five years ago by Dr. Cicely Williams.

The public health significance of protein-calorie-malnutrition is twofold, direct and indirect. For each child with frank Kwashiorkor in a given area, there may be many others less obviously affected but whose growth and development and resistance to the intercurrent diseases of childhood have become impaired. The malnourished child has little resistance to the common infections, which therefore frequently end in death. This probably explains why the case mortality in certain infectious diseases in children may be 100 to 200 times greater in those areas where malnutrition is prevalent than where it is rare.

---

* Note prepared by Dr. Anne Burgess, Rapporteur, Conference of Malnutrition and Food Habits, Mexico, September 1960, received by courtesy of Dr. K. Someswara Rao, Deputy Director, Indian Council of Medical Research, New Delhi.

Protein-calorie malnutrition is therefore a serious and worldwide public health problem. The Specialised Agencies of the UN (FAO and WHO with material assistance from UNICEF) have used their unique international facilities to stimulate interest in and spread knowledge about this important nutritional disease.

One activity has been the organisation of conferences at which authorities on different aspects of the problem and on related problems, could come together and exchange their knowledge and experience. Two conferences sponsored by the Specialised Agencies and the Josiah Macy Jr. Foundation took place a few years ago. The first (1953) dealt with Kwashiorkor, and the second (1955) with "Human Protein Requirements and their Fulfilment in Practice". A third (sponsored by the Josiah Macy Jr. Foundation and the World Federation for Mental Health, and supported by the International Agencies concerned with malnutrition) was held in Cuernavaca, Mexico, in September, 1960. The problems related to the changes in food habits which will have to take place if people are going to make better use of the resources already available, or accept and use a new food, were considered at this meeting.

There is already enough scientific knowledge to bring about considerable improvement in the nutritional health of children in many parts of the world if it could be widely applied. This knowledge cannot, however, be used where it is needed unless the people themselves want to use it, know how to do so, and are prepared to accept the particular and related changes necessary to the establishment of a better nutritional pattern. Unfortunately, there appears to be psychological, sociological and cultural factors which create barriers against rapid changes in food habits, and which are less well understood than the impersonal aspects of nutrition and malnutrition.

At the conference in Cuernavaca on "Malnutrition and Food Habits", nutrition research workers, paediatricians, public health workers interested in nutritional education and members of the Secretariats of the international organisations sought the help of anthropologists, psychiatrists and social psychologists of wide experience, in elucidating the human factors involved in changing food habits.

Case studies of the problem as it is found in parts of Africa, India and Guatemala presented by Dr. R. F. A. Dean (Director, Medical Research Council Infant Malnutrition Unit, Kampala); Dr. K. Someswara Rao (Deputy Director, Indian Council of Medical Research, New Delhi); and Dr. Nevin Scrimshaw (Director, Nutrition Institute for Central America and Panama, Guatemala), showed the wide variation in social, psychological and economic factors which contribute to the prevalence of protein malnutrition, and condition the form and acceptance of preventive measures.

A day spent at Tlaltizapan, a rural centre, brought into focus some of the practical difficulties the nutrition worker meets. There (under the direction of Dr. F. Gome, Director, Hospital Infantil Mexico), a team of doctors, nurses and social workers are carrying out an intensive study of the beliefs, ideas and practices of the people, in order to discover the most suitable approaches to the nutritional improvement of the community. Many of the conditions found in this Mexican village were familiar to most of the participants, nutrition workers from very different parts of the world, and provided a common background to the subsequent discussions.

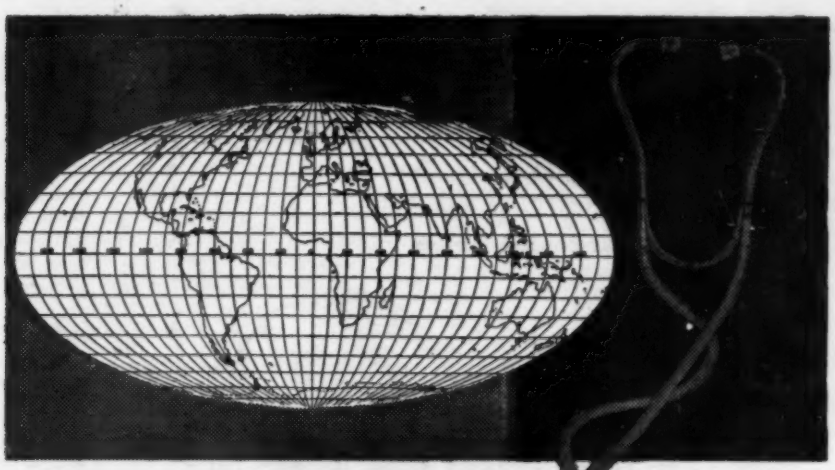
In a review of the processes involved in culture change, and the lessons learned from the past and from the post-war development of co-operation between nutritionists and social scientists, Dr. Margaret Mead (Associate Curator, American Museum of Natural History) added perspective, as well as thought-provoking observations from her own experience of different cultures. Dr. A. T. M. Wilson (Special Adviser, Uniliver) applied a psychiatrist's knowledge of the universal human needs and equally universal differences, to the question of nutritional change, particularly in relation to the apathetic individual apparently resistant to change, and to the ways in which opinion is formed and changed in a community. He also compared the extensive research and organisation deemed necessary in the business world when attempting to change food habits through the process of marketing a new product, with the procedures usually adopted by other agencies.

The social psychologist's experience of market research, attitude and opinion surveys and motivational studies was presented by Dr. J. Stoetzel (Professor of Social Psychology, the Sorbonne, Paris) who also discussed the importance, in the acceptance and rejection of any food, of the 'image' presented by that food to the individual.

Realisation of the immensely complicated nature of the problem of improving nutritional health was reflected in the different disciplines represented at the conference, and by the discussions themselves. Though some nutritional deficiencies, such as goitre or pellagra, are amenable to action on a national basis, the relief of protein deficiency in children depends ultimately on the voluntary co-operation of the individual family.

Government policy, agricultural practices, the economics of the family, the way food is distributed within the family, the beliefs about what the father or the mother or the child should eat, and many other factors have to be taken into account before any nutrition improvement can be planned. The education required to make any plan effective must be equally comprehensive in its approach, and include also a detailed knowledge of the social and human elements which decide the actions of the individual parent in a given community. The conference recognised and discussed the difficulties inherent in acquiring both the knowledge necessary for such planning and the personnel and skills necessary for long continuing stage-by-stage progress, and made some suggestions as to how these difficulties might be met.

Under the chairmanship of Dr. Otto Klinerberg (Professor of Social Psychology, Columbia University, New York) each of the forty participants took every possible opportunity to express their particular point of view, and many aspects of the total problem of malnutrition and food habits, not mentioned in this brief report, were discussed. A fuller report will be published by FAO early in 1961, and should be of much interest and use to nutrition workers everywhere.



ALL OVER THE WORLD
...IN EVERYDAY PRACTICE

TERRAMYCIN*

brand of oxytetracycline

...is used by thousands of physicians,
in millions of cases
...is widely recognised as the most
dependable, most satisfactory
broad-spectrum antibiotic

Effective in:
* Respiratory Tract Infections
* Digestive Tract Infections
* Genitourinary Tract Infections
* Deep-seated and Systemic Infections
* Infections of the bones, joints, soft tissues, and the skin
* Eye and Ear Infections
* Generalised Infections

To meet all needs,
Terramycin is supplied
in a wide variety of
dosage forms

* Trademark of Chas. Pfizer & Co., Inc.

Pfizer *Science for the world's well-being*

PFIZER EASTERN CORPORATION
New York, Panama & Brussels

Exclusive Distributors in India:
DUMEX PRIVATE LIMITED
ICICI Building, 163, Third Road,
Backbay Reclamation, Bombay 1

ENSURE GOOD HEALTH IN OLD AGE

With lipotropic agents (Choline Bitartrate and Inositol) and the vitamins which are indispensable for the ageing organism.

Gerobion

Prophylactic dose: 1—2;
Therapeutic dose: 3—6 tablets a day

Bottle of 30 sugar-coated tablets

E. Merck
DARMSTADT, GERMANY

For further particulars, please write to:

EMEDIA EXPORT CO. m.b.H., Scientific Division
P.O. Box 1313, Bombay-1

EMY 15

NOTES AND NEWS

Council Session of WMA

The 41st Council Meeting of the World Medical Association will be held in the Henry Hudson Hotel, 57th Street, New York City, New York, from April 5th to April 11th, 1961. This hotel is not the most luxurious in the world, but it is conveniently located. During the Council meeting, for the first time, simultaneous translation of the Council proceedings will be done to save considerable time that way, and thus money. There are, however, arguments for and against simultaneous translation, and this, will be purely an experiment.

General Assembly of WMA

The XVth General Assembly of WMA will be held in Rio de Janeiro, Brazil, from September 15th to September 20th, 1961. In preparing for the General Assembly, the Secretary General had the opportunity to visit Rio de Janeiro in November last and meet with Dr. D. M. Cardoso, Secretary General of the Brazil Medical Association. Together, they had several meetings with government officials and found great enthusiasm for the forthcoming Assembly and an excellent spirit of co-operation.

Electrical Anaesthesia

A surgical team of Mississipi, U.S.A. has used a $150-electronic device to anaesthetise a woman patient successfully.

Authorities at the University of Mississippi medical centre said it was the first time electrical anaesthesia had been used in the U.S., and possibly in the world.

The device, a hospital spokesman told newsmen on 14-1-61, was a frequency generator which developed a 700-cycle signal coupled to an amplifier connected in turn to the patient's temples by electrodes about an inch in diameter.

The patient was "under" within 30 to 60 seconds of switching on the anaesthetiser and took a similar time to recover when it was switched off.

The device was developed after four years of research.

After work on dogs and monkeys researchers found that the 700-cycle was the most effective.

Prenatal Size of Child

Scottish doctors have perfected a delicate mechanism which calculates with split-hair accuracy the size of a baby's head before birth, thus considerably reducing the dangers of difficult confinements.

A research team working at the Physics Department of the Western Regional Hospitals Board has built a highly sensitive instrument vaguely reminiscent of the echo-sounding apparatus used aboard the ship.

Their findings after use in more than 100 cases suggest that it may be possible to estimate the unborn child's head to within about one-twelfth of an inch.

It is designed to assist physicians when they anticipate a difficult delivery owing to a narrow pelvic opening.

Cancer

In their constant search for the causes of lung cancer, researchers have examined virus infections, heavy cigarette smoking, and air pollution. Recently their attention was directed to still another factor, tuberculosis.

Writing in the Journal of the American Medical Association, Dr. Broda O. Barnes of Denver, Colo, and Max Ratzenhofer of Graz, Austria, reported that scores of patients were surviving tuberculosis early in life only to contract lung cancer in later years. As collaborators on this paper, the two lung specialists based their conclusions on more than 26,000 autopsies performed at the University of Graz, indicating that in a large number of cases, the two diseases had "competed for the same person, tuberculosis at an early age, and cancer as he grew older."

These results are confirmed in a second report by a Swedish scientist, Dr. Alf Westergren, who examined 100 lung cancer victims and found tuberculosis scars in the chests of one-third of them.

"Accumulating evidence, both in Europe and America, suggests that scars left by tubercular infection, or other lung damage, may in later years become the site of lung cancer," concludes an article in The Cancer Bulletin of the American Cancer Society. "To avoid lung cancer in old age, the cured TB patient must exercise constant vigilance; he must have regular lung x-rays to detect the earliest signs of malignancy". —*Newsweek*, January 16, 1961.

Disease Detectives

Beneath a highly sensitive swinging x-ray machine (photo), a New York woman lay in one of Sloan-Kettering's chromium and steel radiation chambers. As the metal bell moved silently over her, a radioactive isotope (calcium 47), injected in small "tracer" doses in her body, began to concentrate in her bones. Was she a victim of bone cancer? The degree of calcium concentration would tell. If the bones were malignant, large amounts of the radioactive material would appear. Quickly, the radiologist checked the test results, recorded with unfailing accuracy on a small "typewriter," called a digital printer. Calcium accumulation was infinitesimal. The woman was free of cancer.

This remarkable device, called an automatic body scanner, is but one of the dozen or more valuable new machines and instruments made available last year by technological advances to save or prolong human lives or to diagnose elusive maladies. They were described recently by Dr. E. Vincent Askey of Los Angeles, president of the American Medical Association. Some of the others :

A simple eight-part stapling device, patterned after a method developed by Russian scientists in 1958, that enables surgeon to connect severed blood vessels rapidly with stainless-steel staples.

A small "kidney cooler", which refrigerates and preserves human kidneys during surgery on these vital organs.

A heart-lung machine that automatically holds the flow of blood to desired rates during open-heart surgery.

A Japanese camera, the size of the tip of an index finger, which is swallowed by the patient and photographs the inside of the human stomach, accurately spotting ulcers, gastritis, cancers, and other maladies.

Dr. Askey also reported on a new electronic computer that can provide new guides to safe activity levels for heart patients, a fluorescent microscope to speed the diagnosis of certain communicable diseases, and an electronic instrument that measures heartbeats of an infant through the mother's abdomen before and during delivery, so that the child can be protected from oxygen loss.

Summing up with rapid development of new medical tools, Dr. Askey concluded: "To save human lives, medical technology put extraordinary machines and instruments to work at an unprecedented rate during 1960. And the future of automation in medicine looks bright."—*Newsweek*, January 16, 1961.

International Academy of Proctology Award Contest 1960-61

The International Academy of Proctology announces its Annual Cash Prize and Certificate of Merit Award Contest for 1960-61. The best unpublished contribution on Proctology or allied subjects will be awarded $100.00 and a Certificate of Merit. The winning contribution will be selected by a Board of impartial judges, and all decisions are final.

The formal award of the First Prize, and presentation of other Certificates, will be made at the Annual Convention Dinner Dance of the International Academy of Proctology, April 12, 1961, at the Drake Hotel, Chicago, Illinois.

UNICEF Aid for Leprosy Control Plan

The executive board of the United Nations Children's Fund (UNICEF) recently approved more than $16 million in aid to child health and welfare projects in 62 countries and territories. One of the project is for leprosy control in India.

The 30-nation body concluded a two-day session at U.N. headquarters at New York.

The $16 million in aid represents the remainder of the allocations for 1960, and bring the total UNICEF funds allotted for assistance during the past year to a record $25.8 million, a total of $24.3 million of this was for long range aid, and $1.5 million for emergency assistance.

The projects approved inclue 29 which have never previously been aided by UNICEF.

Four of the new programmes are health-service projects in Madagascar, Senegal, British Guiana and Laos, a country which had not previously asked for UNICEF help.

Six of the new programmes are family and child welfare projects in Ghana, Indonesia, the Philippines, Thailand, Ethiopia and Mexico. Four are tuberculosis control projects in Malaya, Sarawak, Viet-Nam and Brazil. Four are leprosy-control projects in India, Pakistan, Brazil and Columbia.

Sanitation "Keystone of Progress"

"Improvement of sanitation is a fundamental requisite of economic advance", Dr. C. Mani, WHO Regional Director, S.E. Asia, told public health experts from various States of India who assembled at Vigyan Bhavan on December 27, 1960 to consider the problems of training and utilisation of sanitation workers in India.

The five-day conference, sponsored by WHO and the Government of India, was attended by WHO sanitarians working in various health projects in India.

Dr. N. Jungalwala and Mr. K. S. Krishnaswamy, both Deputy Directors-General in the Directorate General of Health Services, Government of India, were elected Chairman and Deputy Chairman respectively. Mr. Narayanan Nayar, Executive Engineer, Public Health Engineering Department, Trivandrum, was elected Rapporteur.

Dr. Mani in his address said that "there were several causes of unsatisfactory sanitary conditions. They included economic, social, educational and administrative factors. An important factor—and one which could be remedied—was the quality and proper use of the staff employed in sanitation work.

In India people were generally fastidious about cleanliness in their personal life and in the household but they were not so particular about keeping their surroundings clean. The public found little encouragement from the authorities in improving their environment. Public money spent on social services was often inadequate and the staff employed in these services was insufficient or not fully trained and not always well directed or supervised. So a realistic programme in environmental sanitation had yet to come."

Raptakos Medical Research Board Fellowships

The Raptakos Medical Research Board Fellowships for the year 1961 have been awarded to the following candidates for research work on subjects, and for the periods, mentioned against their respective names:

Mr. A. Irudayasamy, State Forensic Sciences Laboratory, Madras, on Evolving new methods by adapting latest analytical techniques in clinical toxicological analyses for 1961; Dr. Naunehal Singh, All-India Institute of Medical Sciences, New Delhi on Study of reflexes from lungs in normal healthy subjects and in patients with pulmonary congestion and dyspnoea for 1961; Dr. Prasanta Basu, Institute of Post-graduate Medical Education and Research, Calcutta on Studies on excessive bleeding in surgical patients for 1961; Miss Chitra Roy, Indian Cancer Research Centre, Parel, Bombay 12 on The effect of carcinogen on the nucleic acids of mouse embryos for 1961; Mr. A. K. Deb, Indian Institute of Science, Bangalore 12 on Nutritional Studies on Infants (premature and marasmus) from January to March 31, 1961; Mr. T. N. Pattabiraman, Christian Medical College Hospital, Vellore on Metabolism of amino sugar in nervous tissues for 1961.

T.B. Menace Control Activities

A central committee for co-ordinating the activities of different organisations and chest clinics was formed on 19-1-61 at a meeting convened by the Mayor of Calcutta,

Therapy of diabetes with endogenous insulin

In diabetes of mature age onset which cannot be compensated by diet alone and in which primarily the release of insulin is impaired a therapeutic trial with oral therapy is nowadays a must.
Insulin should only be prescribed exceptionally or in emergencies, as it might permanently destroy any latent β-cell function.

In diabetes of mature age onset use oral therapy with its more physiological mode of action:

- maintenance and stimulation of pancreatic β-cell function
- activation of endogenous synthesis of insulin
- restitution of the normal regulatory mechanism

For oral therapy use the standard preparation

RASTINON®
›HOECHST‹

the antidiabetic preparation which combines maximal potency and safety.

HOECHST
PHARMACEUTICALS
PRIVATE LIMITED
Bombay, Calcutta, Madras,
New Delhi, Ahmedabad

HPA 27-33

MP. 60.34

SHARKOFERROL

Growing up "gainfully"

With Sharkoferrol—a well balanced general tonic with important vitamins and minerals in a palatable malt base—he grows and gains weight normally.

COMPOSITION

Each 30 ml. represents:

Vitamin A (partly from Shark Liver Oil)	*25000*	*I.U.*
Vitamin D	*5000*	*I.U.*
Saccharated Oxide of Iron	*3.55*	*Gm.*
Hypophosphites of Lime, Sodium & Potassium B.P.C.	*0.80*	*Gm.*
Vitamin B_1 B.P.	*3*	*mg.*
Vitamin B_2 (Riboflavin) B.P.	*2*	*mg.*
Niacinamide B.P.	*40*	*mg.*
Copper & Manganese	*traces*	
Palatable base enriched with flavoured Malt Extract	*q.s.*	

ALEMBIC CHEMICAL WORKS COMPANY LIMITED BARODA-3

You can put your confidence in Alembic

Mr. K. C. Basu, at the Central Municipal Office. The object is to control the growing menace of tuberculosis.

Chief Minister Dr. B. C. Roy has been elected chairman of the Committee; the Director of Health Services, West Bengal, and the Commissioner of Calcutta Corporation have been elected Joint Conveners.

In his opening remarks, Dr. B. C. Basu, Chairman of the Standing Committee, emphasised that it was only by the combined efforts of the State Government, Calcutta Corporation and other voluntary organisations that they could render effective service in checking the spread of the fell disease. He referred to the proposed introduction of zonal domiciliary service for tuberculosis control in Calcutta by the State Government.

He feared that there would be many cases, incurable and highly advanced and infectious, where some segregation would be necessary. And, as such, Calcutta Corporation, he said, was anxious to start an Isolation Hospital in the near future.

According to a modest estimate, there are 77,095 active and probably active cases of tubercular infection in the city and 17,154 are believed to be open cases. Besides 10 Government and Corporation chest clinics in Calcutta, there are more than a dozen such clinics run by private organisations. The total number of hospital beds in the State for T.B. patients are 3,599.

A number of experts, participating in the conference, drew the attention of all to the fact that early detection was needed if the menace was to be tackled properly.

Again, free medicine should be distributed till the patient was free from the disease. Wayside restaurants, balloonsellers and bidi-makers were the chief source of infection. Hospital beds should be filled up through the chest clinics. And general medical practitioners should have the facility for treatment of their cases at the clinics when needed.

The co-ordination committee includes the Mayor of Calcutta, Health Minister of the State and Chairman of the Red Cross Society as vice-presidents, and a representative each from Bengal Tuberculosis Association and Indian Medical Association besides Dr. P. K. Sen and Dr. P. K. Ghose as experts.

Mental Disorders in the Young

A survey recently made by teachers and students of Calcutta University's Psychology Department has shown that home conditions have a great influence on children's personalities.

Investigation, interviews and clinical tests were some of the methods adopted in the survey of more than 50 homes where one child or more suffered from mental disorders. Environmental factors like poverty, lack of education and recreation, overcrowding, conflicts and broken homes were among the points of inquiry. Every home surveyed had one or more of these factors present in it.

About 50 per cent of the families surveyed were poverty-stricken and their incomes were insufficient for their numbers. Their members underwent hardships and the children's physical and mental growth was retarded. Dissatisfaction with their condition, worries and strain upset the children's mental equilibrium and they suffered from depression, anxiety, restlessness, emotional instability and graver mental disorders.

According to the survey, the academic attainment of the parents in 30 per cent of such homes was "average". An interesting feature was that mothers of 4 per cent of these families had only slight education. This led to a disparity in the outlook of the parents and their children. Conflicts and clashes occurred almost at every stage. The children were made to do things against their liking and this created a sense of deprivation in them and made them indifferent towards their parents.

In 45 per cent of the homes, proper facilities for recreation were lacking, causing fatigue and inactivity among the children. Children of many of these families had little scope for developing social aspects of their conduct. Bereft of companions, they became shy and self-centred and, failing to adjust themselves to social conditions, they withdrew from their surroundings.

Want of parental influence and guidance in broken homes make children depressed and frustrated.

About 60 per cent of the homes surveyed were overcrowded. Other factors found in the homes where children suffered from mental disorders were conflicts among parents, children and other members of the family, and parental autocracy.

Oral Contraceptive

Mr. D. P. Karmarkar, Health Minister, informed the Rajya Sabha on 5-12-60 that the state had not yet been reached to permit the sale of Norethynodrel as a contraceptive in India. Experiments with an oral contraceptive evolved in Calcutta are said to have been successful in 50 per cent cases.

The Minister said that the experts committee for reviewing the development and research on oral contraceptives had recommended that in view of the delicate hormonal balance in the human body and the harmful effects that might flow from upsetting such a balance over a prolonged period by the administration of these steroids, and in the absence of adequate evidence that their use for prolonged periods was harmless, these drugs should not be sold in the country.

The committee, however, suggested that in view of the available evidence of effectiveness of these drugs for disturbances of menstruation, threatened abortion and sterility, for which their use was for a short duration, their sale for therapeutic purposes on medical prescriptions might be permitted.

The Drugs Controller would, however, consider the restrictions that should be imposed while permitting the sale of these products.

More Officers in Army Medical Service

Professional and administrative problems pertaining to the Army Medical Services were discussed at Poona on 27-12-60 at a conference of senior Army Medical Officers from Army Headquarters and commands under the chairmanship of Maj.-Gen. S. P. Bhatia, Director of Medical Services (Army).

After an opening address by Maj.-Gen. S. P. Bhatia, the conference considered the existing deficiency of medi-

cal officers in the Services and the measures taken to improve the situation. In order to encourage young house surgeons in various hospitals to join the Army Medical Corps, a stipend of Rs. 150 per month for a year has been offered. They will be required to serve for a period of three years in the Army Medical Corps.

With regard to the recruitment of nursing assistants the basic minimum educational standard has been raised to matriculation standard.

On the professional side, the conference discussed the preventive measures taken in the services in connection with the National Malaria Eradication Programme.

Annual Conference of the Public Health Association

The fifth annual conference of the Indian Public Health Association was held on 29-12-60 at Patna.

More than 150 delegates from all over India attended the conference. Col. Barkat Narain, president of the Indian Public Health Association, presided.

Sri Karmarkar stressed the need for public cleanliness and urged college students to organise a cleanliness drive in their respectivee areas to create consciousness among the people. This, he said, would induce people to become cleaner.

In spite of a great deal of research that had been carried out in the country Sri Karmarkar said that malnutrition and undernutrition were still prevalent among the people on a large scale. He was convinced that a great deal of improvement could be carried out if the people knew the nutritive value of the existing available articles of food and observed the correct method of preparation of food. "It is unfortunate that the knowledge that we acquire after spending large funds on research does not always filter down to the common man who wants for it. The Association may consider this problem and help to find ways and means of carrying the message to the people," he said.

CORRESPONDENCE

A Criticism of Health Programme in the Third Five-Year Plan

SIR,—As the 3rd Five-Year Plan is soon going to be inaugurated, a criticism of the Health Programme of the Plan is offered below in the light of the achievements of the previous two Plans. The 3rd Five-Year Plan has attempted to maintain a *status quo* in the health services in the country, which means that all the existing services will be continued. A substantial portion of the new allotment in the Plan will be consumed in completing the unfinished schemes of urban water supply, construction work, etc. started during the 2nd Plan.

A successful plan requires trained personnel, adequate money and an ambitious programme. As regards money there is hardly any difference between 274 crores (that is 5·7 per cent of the total outlay) in the 2nd Plan, and 300 crores (that is 4·3 per cent of the total outlay) in the 3rd Plan. This little increase will be consumed by the increase in the price index. There is also useless expenditure on items like the malaria control (55 crores) programme. There is practically no provision for utilising the existing man-power in the country, viz., about 40,000 private medical practitioners. The Planning Commission have simply ignored this question. The 3rd Plan offers practically nothing by way of treatment in the rural areas. X-ray and laboratory investigations will continue to remain outside the reach of the poor villagers. The plan offers nothing for the financial stability of doctors working in the rural areas under various District Boards. Effective prevention and treatment of intestinal infestations, except supply of safe water to a microscopic minority of population in municipal areas, do not find any place in the programme. 'Positive health' will thus continue to remain a dream at the end of the 3rd Plan.

The following important items of public health have failed to receive proper attention in the 3rd Plan:

Health examination of all children of school going age; extensive health education programme; teaching of hygiene in all schools as part of health education; manufacture of standard quality of costly medicines which could inspire the confidence of the profession; checking of adulteration of all food stuffs, specially vegetable products and other eatables; establishment of more cancer institutes; full development of mental hospitals including rehabilitation centres for mental diseases; establishment of more maternity and child welfare centres; establishment of health statistics bureaus; large-scale production of cheap and concentrated dietary supplements, including milk and milk products, enough for all children and mothers; more research on nutrition and evaluation of nutritious properties of widely used foods. These are very important and should have been included in the 3rd Plan.

Health Units—Regarding achievement of the health centres, Dr. Mani, the Regional Director, W.H.O. (South-East Asia) in his 1959 report says: "To provide health services to our vast rural population we are putting up hundreds of so-called health centres at a very considerable cost. And yet we do not succeed in obtaining from many of these centres more than a slight amount of curative medical relief. Although they will no doubt be called upon to continue to give such curative services, more strenuous efforts should be made to see that they also fulfil their preventive functions. Far too little has been done so far at these centres to improve sanitation or to give proper health education, especially in nutrition. Yet these are the foundations on which public health in this region must be built. There is very little real enthusiasm about improving sanitation and this inspite of the fact that the bulk of child population is riddled with intestinal worms and gastro-intestinal infection. The adult population is not much better off".

For carrying out the work effectively, three doctors should be stationed permanently in each health centre, that is one for each sub-centre. The latter should be assisted by local private practitioners. The budget for medicines should be adequately increased, and to avoid malpractice all health centre personnel should be adequately paid. Against four thousand N.E.S. blocks, twelve thousand doctors are available in the country, provided the age limit is totally waived. A village

For the effective control of allergies,
a product without side effects... without drowsiness...

Andantol®

Dragees 4 mg Isothipendyl
Syrup 2 mg per teaspoon
Ampoules 4 mg per ml – i.m. + i.v.

ANTIHISTAMINIC • ANTIALLERGIC

GERMAN REMEDIES & TRADING CO., PRIVATE LTD., BOMBAY 1

Prescribed by Doctors in 108 Countries all over the World

HADENSA for PILES

HAEMORRHOIDS, FISSURES and BLEEDING

HADENSA, recommended by Doctors in 108 countries, gives prompt and lasting relief from Piles, Haemorrhoids and Fissures; relieves pain and itching and is an excellent lubricant.

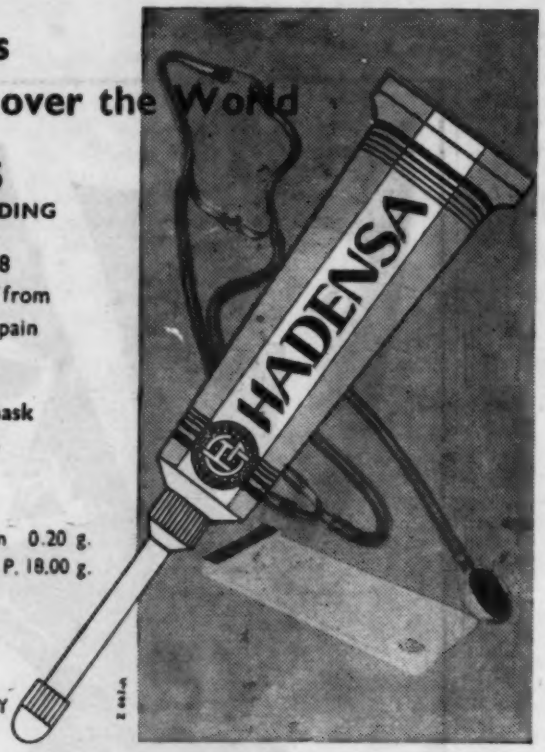
HADENSA contains no narcotics which may mask serious rectal pathology—It is non-staining.

FORMULA:

Monochlorcarvacrol .. 0.01 g. Oleum bituminosum 0.20 g.
Menthol B. P. .... 2.50 g.. Oleum Arachidis B. P. 18.00 g.
Adeps Lanae Base ... 79.29. g.

Only genuine *with this mark*

THE WORLD RENOWNED GERMAN PILE REMEDY



An effective hematopoietic agent for oral administration

FOLVRON*

FOLIC ACID AND IRON

Contains specific essential nutritional substances required by the bone marrow for the maturation of red blood cells and the formation of hemoglobin.

CAPSULES — Supplied in bottles of 30. Each capsule contains: Folic Acid 1.7 mg., and Ferrous Sulfate Exsiccated 0.194 Gm. (3 grains).

LIQUID — Supplied in bottles of 4 fl. oz. Each 5 ml. contains: Folic Acid, U.S.P. 0.89 mg., Ferrous Gluconate, N.F. 0.281 Gm., Flavored Syrup Base q.s.

Lederle

LEDERLE LABORATORIES (INDIA) PRIVATE LIMITED, P.O.B. 1994 BOMBAY 1

*Trade Mark

Health Committee should be appointed by the *gram panchayats* who should report any failings of the health centres to the Civil Surgeon.

The 2nd Plan had provided 23 crores and the 3rd Plan recommends 20 crores for the health centres. This should be increased to at least 50 crores.

Hospitals and dispensaries—First Plan provided 25 crores, the 2nd Plan 59·39 crores the 3rd Plan 50 crores on this head. This should be increased to 100 crores. The present allotment of 50 crores on this head is less than the amount alloted for malaria control which is 55 crores. The provision of clinical laboratories and x-ray facilities, and all types of medicines for all patients are essential for each and every hospital. I am told that in West Bengal, "all types of drugs, including expensive drugs and special drugs, are provided free to indigent patients, from all state hospitals". I wish this were possible in other States also.

Water supply and sanitation—Both being equally important, the allotment over them should be separated. The first Plan provided 42 crores without any improvement. The 2nd Plan provided 91 crores (28 crores for rural and 63 for urban areas) out of which only 37 crores have been spent with little improvement. The 3rd Plan provides 88 crores. In towns, the public health engineering department has covered a population which is only microscopic in number. In villages the repair of existing wells should have been our first concern, and new wells should be bored where wells do not exist at all. The quality of wells should not be compromised. Drains should be provide in thickly populated villages through *gram panchayats*.

Regarding urban water supply, Shri A. N. Khosla, member, Planning Commission, in his article in the *Family Planning News* in September 1960 says: "The number of new schemes to be taken up against the tentative allocation in the 3rd Plan will, therefore, be limited. . . . "Let people understand this statement. The people will have to solve this problem themselves."

Communicable diseases—(a) Malaria: Malaria has now practically disappeared. I am pessimistic about the D.D.T. spray as causing disappearance of malaria.

(b) Tuberculosis: The 2nd Plan provided 14 crores, and the 3rd Plan provides 12 crores. The incidence of this disease in West Bengal varies from 1·3 to 2·5 per cent and in Bihar it is no less. Even if there is 1 per cent morbidity, the number of cases will be one thousand. One clinic in a population of 1 million, as decided by the Government, cannot cope with it. Laboratory and x-ray facilities are absent in all the clinics. Regarding prophylaxis of tuberculosis B.C.G. vaccination, health education, nutrition, proper record of vaccinated cases and follow-up etc. are necessary. Reactions due to defective vaccine have recently been reported at many places. This is very serious. The Indian Medical Association should be given charge of the prophylaxis programme. The Government has failed to achieve the target of the 2nd Plan in this respect.

(c) Gastro-intestinal infection: These common diseases have not received due attention in the Plan, except provision for water supply to a microscopic minority of urban population.

Medical education—The Planning Commission's figures regarding the number of doctors and their distribution in the country are not correct. The register maintained by different State Medical Councils are imperfect. The Planning Commission hides this fact by adding the line "actively engaged in practice". Fearing an acute shortage of doctors for future plans, they have recommended an increase in the number of medical colleges and revival of the old licenciate course. The former proposal can be welcomed so long as there is no unemployment in the profession and these colleges are started with full equipments and adequate and qualified staff. The second proposal is a retrograde step. It saves only one year's time and involves a lot of expense and trouble in maintaining the dual standard of medical education. Without providing any benefit it will reintroduce dissension in the medical profession.

We should utilise the services of experienced private practitioners in the various health programmes of the country. For this purpose, the age limit has to be waived, and private practitioners working in rural areas should be subsidised. The present doctor: population ratio is 1:6,000. By providing reasonable subsidy a large number of private practitioners can be persuaded to settle in rural areas. Instead of utilising the services of post-graduates in Block Service and elsewhere, they should be absorbed in the various medical colleges. Their posts should be made non-practising, for which they should be adequately compensated. A sum of rupees 3·5 crores was allotted in the 1st Plan for this work. The 2nd Plan provided Rs. 30 crores on medical education and six crores for training. The 3rd Plan provides only 17 crores, out of 35 crores for education and training.

Family planning—The government has allotted 25 crores for this key programme. Differences in rural and urban F.P. centres are undesirable. The services of doctors should be requisitioned in all family planning clinics. A 20 per cent cut in the grant to voluntary organisations from the second year is undesirable.

A suggestion—From a study of the Government's role in medical care all over the world, it appears that in most of the countries, the Government, the workers, and the employers together contribute to a fund which is enough for carrying out all the health and allied activities of the countries concerned. Sweden has increased the old age pensions. Here, in India, the Government never thinks in such terms. In taking upon itself the entire responsibility of providing medical facilities the government is finding it very difficult to do justice to it. No doubt, the government has decided to implement the above scheme in industrial areas of the country. If implemented, it will cover only a microscopic minority of the population. The Planning Commission do not propose to extend this scheme gradually to the rural sector or to the whole country. My suggestion in this respect is that each individual in the country should annually contribute Rs. 2/- and let the Government also contribute an equal amount, that is Rs. 2 per head, as is done in other public works in N.E.S. Blocks. A family of five persons will thus have to pay only Rs. 10/- annually, which amount may be collected through *gram*

panchayat in the shape of cash or grains. With this money a unit of 20 thousand population can arrange to have a very big hospital and thus the objective of the creation of positive health and health consciousness, within the present resources of the country, will be fulfilled in a short period of time.

The Bihar State Branch of the Indian Medical Association, while making its own recommendations for the 3rd Plan have accepted the principles underlying my Health Insurance Scheme, and recommended the Government to accept the same.

I am etc.

P.O. Tajpur,
Darbhanga.

S. N. P. AGRAWAL

REVIEWS

Anatomy for Students and Teachers of Physical Education—By J. W. Perrott, L.R.C.P., M.R.C.S.; 1959, Pergamon Press Ltd., London, Orient Longmans Private Ltd., Calcutta; 9"×6", pp. xii+200; 30sh. net.

Kinesiology is the fundamental basis of physical education. A definite relationship exists between the structure and the function of an organ. A correlation between the two is, therefore, essential to understand clearly the science underlying the different mechanisms of the body.

In this book, Dr. Perrott has presented this problem with profound skill analysing with precision the fundamental biological principles governing the science of physical education. In doing so, the author has considered not only the elements of anatomy, concerned with the mechanics of kinesology and work, but has also discussed critically their behaviour with respect to age, posture, body build and different exercises including various types of athletics, games and sports.

The lucid and simple expressions of the book explaining the complex biophysical phenomena are an eloquent testimony to the author's masterly technical skill. He has stressed adequately the importance of a knowledge of biology without which understanding of the science of physical education is incomplete, imperfect and impossible.

This book, the reviewer feels, will be of paramount help to every teacher and student of physical education, medical as well as non-medical, not only to understand the subject but also to make a critical assessment of the same in a rational manner.

P. R. ROY

Nonnarcotic Drugs for the Relief of Pain and Their Mechanism of Action—Consulting Editor Frank M. Berger; Annals of the New York Academy of Sciences, Volume 86, Art. 1, March 30, 1960; Published by the Academy, pp. 310; $3·50.

This monograph deals with the researches carried out on nonnarcotic drugs for the relief of pain and their mechanism of action.

From the therapeutic point of view pain is an intriguing problem, and although there has been tremendous advance in the treatment of many diseases by the discovery of so many potent new drugs since the advent of this century, very little advance has been made in the field of any ideal analgesic for the relief of pain. A few that we have, viz., opium and its preparations, aspirin, etc., were discovered before the beginning of this century, and they cannot be said to answer all our requirements and certainly not the ideal ones that we would like to have. The reason, as the consulting editor of this monograph says, is that the physiology of pain is not yet clearly understood and there exists no method for measuring its intensity.

This is not to be wondered at as the sensation of pain has two components, one being the perception of pain, the other the reaction to it. The reaction is more psychological, complex and varies from person to person to the same painful stimulus, and even at different times in the same individual. Researches of Wolffe in recent times have thrown much light on these two components of pain, although no reference has been made about his work in these articles.

As regards the perception of pain this is mediated through complex stages, i.e., the source of stimulus sending afferent impulses from the periphery to the central nervous system, where it is integrated and abstracted. The key to the problem is, therefore, to understand how stimuli are translated into perceptions or sensations; but, as Livingstone (1943) said, neurophysiology has no information to give us on this except the physiologist's conception of pain admirably expressed by Sherrington as "the psychical adjunct of an imperative protective reflex".

Our experiments are carried on in animals with experimental pain techniques, which, according to Beecher (1957) and others are probably useless for the appraisal of analgesic agents, and that assay of the analgesic power of drugs can be carried out only when pathological pain is employed.

F. M. Berger has admirably divided the analgesics in the introduction (The Purpose of This Monograph) as "All drugs that relieve pain can be divided into three large groups. The first comprises the drugs that modify the perception of stimuli at the pain-receptor sites. The agents of the second group modify the central perception of pain, and those of the third group change the reaction of the individual to the pain experience".

Difficulties lie here as there is hardly any analgesic existing now which can modify pain perception without at the same time altering the reaction of the individual to the pain experience by producing changes of mood and consciousness. Beecher goes even so far as to suggest that analgesic agents appear to exert their principal, if not entire, effect on the "reaction component" rather than on the "original sensation".

Researches are being directed on this line—to find out some substance that would change perception of

pain without affecting the reaction to it. This will be of great scientific and practical value. Such a substance, moreover, must not be addicting, as it would not necessarily affect the mind, and would not produce euphoria.

It may well be that new analgesics with suitable sites of action could be of great assistance in elucidating the physiology of pain. It is not easy,—and the purpose of this monograph is to stimulate researches on this line.

There are as many as twenty-eight research papers in this monograph dealing with studies on different aspects of nonnarcotic analgesics of which as many as ten are on the carisoprodol alone. It differs from morphine and drugs like salicylate with antipyretic analgesic action, and is not anti-inflammatory. Its action on the central nervous system differs from that of meprobamate. It possesses muscle-relaxant properties that are qualitatively different from those of other accepted centrally acting skeletal muscle-relaxants, is the conclusion arrived at by Berger and his associates, whose researches on the chemistry and pharmacology of carisoprodol are admirably presented in the first article on this substance. Others come more or less to the same conclusion in their own line of researches. But Prommel and his colleagues in their paper on the mechanism of carisoprodol analgesia compare its action with aspirin and come to the conclusion that these two are true analgesics and their relationship would appear to lie in their antipyretic action, and so they conclude that carisoprodol is an antithermic analgesic.

Phenyramidol is a new drug unique in its biological effects in that it possesses measurable analgesia as well as muscle-relaxant properties is the conclusion arrived at by O'Dell, who could not observe in the pharmacological studies of this drug other central effects occasionally seen with other analgesic or muscle-relaxant drugs, such as sedation, euphoria, and mental confusion. He thinks that the analgesic activity of phenyramidol is of the order of codeine and the mechanism of the muscle relaxation (interneural blockade) produced by this drug is desirable in that such a mechanism can abolish abnormal muscle tone without impairing neuromuscular function.

The nature of pain, and also the cause of painful state can be very complex. For example, while pain can be, and very often is, partly or entirely a result of muscular spasm, in many instances where the pain is not directly associated with a muscular spasm it is exaggerated or intensified by an accompanying muscle tension. Thus, as has been recognised, combined analgesic and muscle-relaxant actions will very often be more effective and beneficial in overcoming the total pain experience than will either of these actions alone. Phenyramidol, a single chemical entity, uniquely provides such a combination of effects, is the final conclusion arrived at by O'Dell after studying the pharmacology of this substance; and Butterman's conclusion is that phenyramidol administered orally is a moderately potent and safe analgesic for acute and chronic pain for both ambulatory and hospitalised patients.

Zoxazolamine and chlorzoxazone are the other substances whose analgesic properties are under study by Conney and Burns.

Every article taken individually and collectively with others has unique value in the evaluation of the analgesic mechanism and the pharmacological actions of non-narcotic drugs for the relief of pain. Fresh studies are being made on the pharmacology of salicylates and related compounds in the light of new observations made recently, and James Reid's paper gives us a comprehensive list of their multifarious actions. Similarly, the researches on phenylbutazone and allied substance oxyphenbutazone are being pushed on, and there are three excellent papers on the recent researches on these substances. The physiological conception of pain, the mechanism of its perception and the factors involved are being studied intensively along with the search for an ideal non-narcotic analgesic drug on the basis of the new conceptions. The researches are being conducted and their therapeutic application on a wider scale is expected to follow soon.

The New York Academy of Sciences deserves congratulation for bringing out such a volume which gives the results of the latest research studies on the subject by the most able Research Workers in the field. The book should be commended as a "must" on the shelf of every research worker on this subject. The subject has great potentiality and the result of the researches will be keenly awaited.

The paper, the printing and the charts are all very beautiful and pleasant to handle, and reading is thereby made easy.

S. Sen

OBITUARIES

Dr. J. P. Bhumgara

Dr. J. P. Bhumgara passed away on December 24, 1960 at Navsari, District Surat. Born at Agra in 1903 he had his secondary education at Surat. After matriculating, he continued his studies at Bombay and passed his M.B. B.S. examination from the Grant Medical College in 1927 and M.S. in 1930.

Dr. J. P. Bhumigara

After he got his M.S. degree he came to Navsari to join Daboo General Hospital in the year 1935. He started his own hospital in 1952 and worked there with reputation as an efficient surgeon till 1960. Good nature and genial temperament made Dr. Bhumgara very popular amongst all those with whom he came in touch, whether in the social plane or in his professional capacity.

His death is indeed a great loss to the whole of Navsari town and taluka as well as to the Indian Medical Association, Navsari Branch, of which he was an energetic and distinguished member.

Dr. S. J. Bhatt

Dr. Someshwar J. Bhatt was born on March 2, 1890. He was educated at R. S. Dulal High School, Broach and at B. J. Medical School, Ahmedabad from where he passed the L.C.P.S. in 1920. He was a senior member, and the president of the Jambusar branch, I.M.A. in 1951-52. He was a member of the Jambusar Municipality. He died on 27-12-60 of coronary thrombosis. He leaves behind a widow, two sons and a daughter. In his death the Jambusar branch has lost a good guide and a sincere friend.

Dr. S. J. Bhatt

Dr. J. B. Desai

The grand old man of the medical profession of Gujarat and the only surviving founder member of the All India Medical Licentiates' Association, Dr. Jamiatram B. Desai passed away in Ahmedabad on 22-10-60 at the age of 87 years.

Born at Alina (District Kaira) on 21-12-1873, Dr. Desai had his early education in his own village and then moved to Ahmedabad where he studied up to matriculation and joined the B. J. Medical School, Ahmedabad. Immediately after completion of medical studies in 1895 he joined Bombay State Medical Department where he served till his retirement in 1928.

During the long spell of 33 years' service Dr. Desai got the opportunity to serve at various places in the then State of Bombay and also for some time in Punjab and Assam with the Kala-Azar Commission and wherever he went, he won the love and admiration of the people and the authorities alike.

Dr. J. B. Desai

The greatest achievement of Dr. Desai's life was his service to the medical profession through All India Medical Licentiates' Association, which was established in his own house at Parel, Bombay, in 1906 with the help of six other colleagues. Since then Dr. Desai devoted the greater part of his life to the cause and advancement of medical licentiates of India. He presided over the Annual Conferenre of this body held at Calcutta in 1948. He was member of both A.I.M.L.A. and I.M.A.

He took great interest in rural medical relief and educational and religious activities and founded an educational trust of Rs. 50,000/- for books and fees for the students of his community. Poor Boys' Library at Dakore, a Dispensary, Maternity Home and Waterworks at his home village Alina and a donation of a piece of land for primary school at village Saijad are the living monuments of the love and generosity of Dr. Desai towards education and medical relief.

In Dr. Desai's death the medical profession of Gujarat has lost a great friend, guide and philosopher and his village a noble son of the soil.

Dr. M. K. Dixit

Dr. Mohannath Kedarnath Dixit died at his residence at Surat on December 15, 1960, of apoplexy at the age of 83 years. Dr. Dixit graduated from the Grant Medical College, Bombay. Because of his brilliant academic career he was awarded the Sir Mangaldas Nathubhai scholarship of the University of Bombay. He studied in England for a period of three years and on his return, set up private practice at Surat. During the World War of 1914-18, he served as a medical officer in the Indian Medical Service.

Dr. M. K. Dixit

Dr. Dixit was associated with the Indian National Congress since 1907. He came in close contact with the late Shri Balgangadhar Tilak, Motilal Nehru, Lala Lajpatrai and other political leaders of that time. A staunch Congressman, Dr. Dixit was the leader of the Congress party in the Surat Borough Municipality for a number of years. During his regime as the President of the Municipality, the Congress called upon the people to boycott the Government-sponsored schools, when Dr. Dixit came forward and organised a number of independent schools in the city.

A founder member of the Surat Medical Union, and its president for well over a continuous period of fifteen years, Dr. Dixit was elected president of the Gujarat, Saurashtra and Kutch Territorial branch of the Indian Medical Association in the year 1949. Endowed with a magnetic personality, tenacity of purpose, and dauntless spirit, Dr. Dixit was a born leader and took keen interest in the social, medical, educational and political activities right to his end. By his demise, a void has been created in the medical profession which cannot be easily filled.

Dr. Dixit leaves behind him his widow, two sons and a very large circle of friends and admirers.

Dr. G. B. Roy

Dr. G. B. Roy was born at the village of Sodepur, under Asansol Sub-Division in 1889 and passed away on December, 1960 after suffering from diabetic gangrene, at Sanctoria Hospital.

He obtained his L.M.P. diploma from Campbell Medical School, Calcutta, in 1914. He was a brilliant scholar and obtained honours in different subjects.

He joined the Colliery Medical Service under M/s. Bengal Coal Co. Ltd., in 1920 and was posted at Damodarpur wherefrom he retired in 1943 with name and fame. He then started independent practice at the same place. His large-heartedness and interest in social services earned him great respect and popularity. He was a founder member of Jamuria branch, I.M.A. and was elected vice-president for five consecutive years.

SUPPLEMENT
Journal of the Indian Medical Association

VOL. 36 No. 4 CALCUTTA FEBRUARY 16, 1961

XXXVII ALL-INDIA MEDICAL CONFERENCE, CALCUTTA

Dr. Debesh Mukherjee, Organising Secretary, 37th All-India Medical Conference has issued the following :

The 37th All-India Medical Conference is scheduled to be held on March 12th, 13th and 14th, 1961 in the city of Calcutta.

The first All-India Medical Conference was held in this city in 1917. The 5th All-India Medical Conference was also held here in 1928 during the session of the Indian National Congress when Netaji Subhas Chandra Bose was the G.O.C. of the Volunteer Brigade. This 5th All-India Medical Conference saw the birth of the All-India Medical Association, since renamed Indian Medical Association. After 1928 the All-India Medical Conference met in Calcutta in 1931 and again in 1948 for the Silver Jubilee Session. This is the fifth time that Calcutta has the privilege of being the venue of the All-India Medical Conference. We hope sincere co-operation and good wishes will not be wanting from members of all the Branches of the Indian Medical Association to make this Conference a success.

While extending to you a cordial welcome on behalf of the Reception Committee, we request you all who are desirous to attend this Conference to register your names and reserve accommodation as early as possible. Necessary *registration and reservation forms may please be obtained from the Organising Secretary, 67, Dharamtala Street, Calcutta 13.* The Registration Fee is Rs. 5/- for each member or delegate.

Railway concession forms will be sent either to the members or to Branches on request.

Arrangements for lodging and boarding for the members and delegates have already been made by us at the Conference site. Individual furnished rooms with attached bath will be available for the members and also for their families. Detailed information will follow. Moreover hotel accommodation of various types are available in Calcutta. A fairly good hotel accommodation with food will cost Rs. 14/- to Rs. 20/- per day both for vegetarians and non-vegetarians. Some hotels also cater South Indian and Maharashtrian type of vegetarian foods. Purely western style hotel accommodation, e.g., at the Grand and the Great Eastern Hotel, will also be available. For accommodation in hotels, booking well in advance is essential and members are requested to intimate their requirements in this regard without delay.

A member's kit should contain light bedding and mosquito net. No warm clothing will be necessary. Members staying at the Conference Camp will be expected to make their own arrangements to keep their rooms under lock and key.

There are many *places of interest* in Calcutta amongst which the following may be mentioned : Calcutta Medical College and Hospitals, R. G. Kar Medical College and Hospitals, Nilratan Sircar Medical College and Hospitals, Calcutta National Medical Institute and Hospitals, Chittaranjan Seva Sadan, Chittaranjan Cancer Hospital, K. S. Ray Tuberculosis Hospital, Child Health Institute, Post-graduate Institute for Medical Research and Education and Seth Sukhlal Karnani Memorial Hospitals (old Presidency General Hospital), School of Tropical Medicine and All India Institute of Hygiene and Public Health; The National Library, Asiatic Society, Calcutta and Jadabpur Universities, University College of Science, Bose Institute, Indian Association for the Cultivation of Science, Indian Statistical Institute, Indian Ceramic Institute, Indian Institute for Biochemistry and Experimental Medicine, etc. The Botanical Gardens at Shibpur, Ramkrishna Ashram and Mandir at Belur, Dakhshineswar Kalibari of Ramkrishna fame, Kali temple of Kalighat, King George's Docks at Kidderpur, Vivekananda Bridge at Bally, Howrah Bridge, Rabindra Sarobar, Zoological Gardens, Agri-horticultural Society's Gardens, Victoria Memorial, Eden Garden, Indian Museum, Sir Charles Stewart Hogg Market, Government House, High Court, Assembly House, Pareshnath Jain Temple, Meenakshi Mandir, etc., are other places of popular interest in and about Calcutta which attract visitors. Besides, the Haringhata Milk Centre as also the Vishwabharati, Durgapur, Panchet, Maithon and Mayurakshi Dam sites are easily approachable from Calcutta.

Arrangements for sight-seeing programmes are being made. Social programmes are also being planned for all the three days of the Conference.

Even without being a member of the Indian Medical Association any medical man may attend the Conference after enrolment on payment of Rs. 10/-.

MEMBERS OF THE WORKING COMMITTEE AND THE CENTRAL COUNCIL, DELEGATES AND VISITORS, WILLING TO ATTEND THE SESSION AT CALCUTTA, ARE REQUESTED TO INTIMATE TO THE ORGANISING SECRETARY : (A) THE DATE AND TIME OF ARRIVAL AT CALCUTTA (WHETHER AT HOWRAH OR SEALDAH RAILWAY STATION OR DUM DUM AIRPORT) AND (B) THE TYPE OF DIET REQUIRED (VEGETARIAN OR NON-VEGETARIAN).

The site of the Conference will be the Calcutta Improvement Trust Buildings on the Barrackpore Trunk Road, in the Northern part of the city.

PROGRAMME

7th & 8th March, 1961	...	Meeting of the I.M.A. Working Committee.
9th, 10th & 11th March, 1961		Meeting of the I.M.A. Central Council (Annual).
12th & 13th March, 1961	...	All-India Medical Conference (Open Session)
14th March, 1961 ...	...	Meeting of the I.M.A. Central Council (Ordinary).

Scientific Sessions will be held on the 12th, 13th and 14th March. Members desirous to read papers in the Scientific Session are requested to contact the Organising Secretary immediately.

All communications and enquiries regarding the 37th All-India Medical Conference are to be addressed to the Organising Secretary at 67 Dharamtala Street, Calcutta 13 (Telephone 24-5023).

VII BOMBAY TERRITORIAL CONFERENCE, 1960, BOMBAY

The Conference was inaugurated on the 26th November 1960 at Taj Mahal Hotel, Bombay, by Shri Homi J. H. Taleyarkhan, the Minister for Public Health after the welcome address was read by Dr. R. N. Cooper. The messages of good wishes to conference were read by Dr. K. K. Datey, Hony. Organising Secretary and the Presidential address was delivered by Dr. Suresh C. Sheth, President, Bombay Territorial Branch. The felicitation address to Dr. R. V. Sathe as president-elect, I.M.A., was read by Dr. Chamanlal M. Mehta, Past-President, I.M.A. and the felicitation address to Dr. V. R. Khanolkar, Vice-Chancellor, University of Bombay, and a distinguished Medical Scientist was read by Dr. C. S. Thakar, Past-President, I.M.A. The caskets were presented to Dr. R. V. Sathe and Dr. V. R. Khanolkar by Shri Homi J. H. Taleyarkhan, Minister for Public Health, Dr. C. L. Jhaveri spoke about 'Ourselves' on the occasion, and Dr. R. K. Menda, Hony. Jt. Organising Secretary proposed the vote of thanks to the Minister and others who helped in making the conference a success. The inauguration function was followed by an At Home at the same place at 5 P.M.

The Scientific session was held on the night of 26th November 1960 and for the whole day on 27th November 1960. There was an open session at 5 P.M. on 27th November 1960. All these as well as the Conference Lunch on 27th November were attended by large number of members.

WELCOME ADDRESS

Dr. R. N. Cooper, the chairman of the Reception Committee in his speech extended a cordial welcome to the guests and delegates. Inter alia he said :

"There are many problems that are engaging the attention of the Medical Association. I shall just touch upon a few.

The public has become hospital minded, with the result that the hospitals are over-crowded. In my student days it was unusual to see a patient lying on the floor of a hospital for want of a proper bed. To-day if you were to visit a hospital you have to be careful to see that you do not stumble over someone's foot or worse still trample upon someone lying on the floor.

Beds and more beds is the cry of the ailing and the distressed. It is not practical to go on adding beds to an existing teaching hospitals. Experience has taught that a hospital with an accommodation of more than seven hundred beds becomes unwieldy. In such a case it is more practical to build smaller hospitals with about a hundred beds in different parts of the city. Routine type of cases can be taken care of in the smaller hospitals. The bigger hospital will receive such cases as are suitable for teaching purposes.

Our hospitals are understaffed. The long queues waiting in the Out-patient's department bear eloquent testimony to this statement. There should be many more assistant Hon. Physicians and Surgeons appointed to attend to these waiting crowds of patients. Thus the work in the Out-patient's department can be expedited. These assistant honoraries will select out a few cases and keep them for the full honorary for his expert

MEMBERS OF THE CONFERENCE COMMITTEE

L-R—Standing : Dr. D. S. Munagekar, Dr. K. M. Thacker, Dr. D. Daftry, Dr. M. D. Panchmia, Dr. T. J. Lalwani, Dr. G. D. Purandare, Dr. S. J. Bhat, Dr. B. S. Pendse, Dr. R. K. Shah, Dr. J. J. Merchant. Sitting : Dr. R. K. Menda, Dr. C. L. Jhaveri, Dr. R. V. Sathe, Dr. Suresh C. Sheth, Dr. R. N. Cooper, Dr. C. S. Thakar, Dr. (Mrs.) G. K. Mukadam, Dr. R. H. Karmarkar, Dr. M. A. Panwala.

SHRI HOMI J. H. TALEYARKHAN, MINISTER FOR PUBLIC HEALTH, MAHARASHTRA, BOMBAY

opinion or for purposes of clinical instruction of the students.

These additional assistants may be placed in charge of the new smaller hospitals. These smaller hospitals will prove to be a good training ground for these younger men. The authorities will also have opportunities to see the type of work that these individuals turn out. Future promotions as full honoraries will depend upon the quality of their work and not upon recommendations influenced by other considerations. Merit and merit alone should be the consideration in these appointments.

The system of appointing honoraries is not in the best interest of the patients. However, for the present this system must continue. The patients will be best served by the appointment of full-time medical officers with attractive salaries. It will not be possible to obtain the services of really talented men without offering them such salaries.

During the stage of transition the existing system should be modified according to the American pattern. The newly appointed medical officer will be paid a reasonable salary for five hours of regular hospital work. During these duty hours he will not be permitted to do any private practice. After the completion of his duty hours he will be permitted a restricted private practice on the premises. The hospital will provide rooms, equipment and staff for such practice. The hospital will also provide a nursing home attractive enough for these private patients who come from a higher income group. The income derived from this restricted practice will be divided in an agreed proportion between the hospital and the salaried officers. The ceiling for income arising out of such restricted private practice having been fixed, the medical officer will have no urge to establish a fabulous practice.

If he has that urge he can leave the hospital and go in for private practice and he will soon find that if his earnings cross a certain level he will be working for the Income-tax officer.

Medical treatment is becoming very expensive. This is in part due to the heavy duty imposed on imported drugs. It seems unnatural that a Welfare State should make money out of drugs so sorely needed by the poor and suffering patients. The drug policy of the Government must be revised."

Addressing the Minister, he said,

"There are many more problems that I can narrate. You have enough on your hands to give you a headache or a nightmare or a rise of blood pressure. Therefore, for reasons of health I shall desist. Besides I must have some considerations for the gentle and patient lady by your side who has the double task of managing a husband and an over-worked minister.

I, therefore, once again welcome you in our midst and request you to inaugurate this conference."

INAUGURAL ADDRESS

Inaugurating the Conference, Shri Homi J. H. Taleyarkhan, Minister for Public Health, Small Savings and Tourism, Government of Maharashtra State, said :

"Meeting you today, gentlemen, is a pleasant continuity of the habit of contacts which we have so happily set up in recent months. I always welcome the opportunity of meeting you and of appreciating the various interesting suggestions you put up before me for the benefit of the administration, the public and the practitioners.

The traditions of the Indian Medical Association have been very high, their range of service very long, their devotion to duty very steadfast, their variety of interests very wide and not the least their watchfulness of medical interests very commendable without being unreasonable.

You will be glad to know, gentlemen, that I have made a point to meet your representative bodies in various districts of the State and I have already met quite a few of them by now. I am meeting the Indian Medical Association at Nagpur next week. From all these meetings I am able to feel the pulse of medical opinion in the State and to know the role you are playing and are prepared to play for the welfare of the ailings in the State. I have always found one common trend at all these meetings that I had the good fortune of attending. And that common trend has been that whatever occasional differences there may be between Government policies and doctor's expectations, whatever occasional disappointments there may be created as a result of the Government not being able to accept the various suggestions you make and which I invite you to make, I have always found the willingness of all to render services, to help the Government in its efforts in the Public Health services as much as possible, sometimes even if it means making sacrifices of your time, your practice, and your profits. I assure you I have appreciated that spirit very deeply. But I hope at the same time that you have found the Government trying to be as responsive as possible to the various helpful and constructive ideas that you gave us from time to time.

It is truly a matter of great pride that in India we have some of the finest medical talents in the world and the matter of greater pride still, that quite a number of such specialists, should be in Maharashtra. The very fact that one highly respected and much reputed offspring of the medical profession in Maharashtra should have been elected as the chief of the All India Medical Association is a great tribute to our state, even though it may not have been the first time that it may have been conferred the honour. The contribution of Dr. V. R. Khanolkar to remove the cancer in the human system or in the University system should be any, is an impressive manifestation of the reach of his research both into the body and the mind. We have a host of others,

specialising in one direction or the other and helping thereby to raise the already high pedestal on which the reputation of Maharashtra's medical service, like of its brother services, has been elevated.

But of all these specialities I have found that there is one speciality common to all our doctors. They are all specialists in being essentially human. It is not surprising, therefore, as the medical profession is being called the noblest of the lot and if it has to deserve and retain this description of its quality, it is because you have always shown yourselves to be humanitarian first and humdrum next and so it is delectable to see such a gathering of noblemen assembled to deliberate how best they could help suffering humanity, thereby putting their duty first and their difficulties behind.

After this appraisal of your duties, let us now deal with some of the difficulties which you have not denied yourselves the opportunity of pointing out to me. And that is as it should be. The idea can best be served by being practical. You, gentlemen, do not need to be told of the value of the one and the utility of the other.

I hope you will agree that we have managed to bring about much better liason between the Government authorities and yourselves at all levels. As a result of that and the spainstaking application of mind and energy of our staff whether on the Public Health or on the Medical side, there has been a substantial speeding up of various Public Health activities in the State. Already a large number of our schemes in the Second Plan have handsomely exceeded their targets, specially those of Family Planning, District Health Organisations, Mobile dispensaries, Malaria eradication, Smallpox control and water supply, where against the provision of Rs. 2·75 crores in the Second Plan, we have already sanctioned as much as Rs. 11·00 crores on 120 schemes, 70 of which have been completed and with the addition of one more scheme—the biggest one of the lot—Rs. 3 crores worth the Bhima Water Supply Scheme at Sholapur—now under execution.

Construction work on new or an expansion of existing hospitals, dispensaries, primary health centres, provision of equipment and staff have also been proceeding well apace all over the State. One of the biggest forthcoming schemes nearing completion, is the new J. J. Hospital buildings.

At the recent State Health Ministers' Conference, held at Jaipur, Maharashtra came in for several very commendatory references both from the Union Health Minister, who presided, as well as from others who participated in the discussions, and we have been assured of considerable encouragement for our schemes. Maharashtra finds place on both of the only two committees which have been decided to be formed at the Conference, one for the consideration of more effective leprosy control and other for devising ways and means for T.B. control.

While it may be true that we are still a little short of staff, we are far better off compared to the majority of other States. It is interesting to note here that 62 per cent of the world's medical personnel serves only 31 per cent of the world's population namely Europe and America. Our difficulty is not so much the paucity of doctors or medical personnel. We have nearly 80,000 Allopathic doctors which is the third or fourth highest number of doctors, physically speaking, for any one country in the world and if we were to count all the rest, like R.M.P.s, Ayurveds, Hakims, Homoeopaths, Vaidyas, etc., perhaps proportionately too, India would rank very high.

In Maharashtra alone, we have nearly 10,000 Allopaths and counting all the rest, a very sizable quantity of doctors of all varieties, which would give us an average of one doctor for every 700 of the population in the State as against the Near and Far East, India, Burma and Pakistan average of 1 doctor between 5,000 to 20,000 of the population.

Our difficulty largely arises from the fact that they are not willing to serve in the rural area where their shortage is the most acutely felt, for example, our turn-out of Allopathic doctors in 600 in a year and as many from other systems of medicine, like Ayurvedic, etc. Maharashtra has the largest number of medical students for any one State in the country, i.e., as many as 4,500 in our six Allopathic colleges in the State.

Even so, the problem of mal-distribution looms large before us, and Government is considering various ways and means to overcome this difficulty. One of the schemes already put in commission is to provide freeships to those students who are prepared to serve Government for a period of five years after their graduation. Another proposal is to consider filling in the vacancies of sanction posts with R.M.P.s, G.P.A.M.s and others, awaiting the availability or rather the readiness of the higher qualified doctors to go into the rural areas.

SHRI HOMI J. H. TALEYARKHAN DELIVERING THE INAUGURAL ADDRESS

"Anticholinergic drugs alone are inadequate in the management of peptic ulcer...They should be administered only as adjuncts to conventional treatment with antacids, diet, sedation, and other therapeutic measures."[1]

1 Kirsner, J.B., et al.: M. Clin. North America, 41:499 (March) 1957.

In peptic ulcer: six aids to total management

SEBELLA is not only an effective antispasmodic and anti-secretory agent, but also an antacid, sedative, demulcent, and pepsin-inhibitor. Thus, one convenient preparation satisfies six requirements of total peptic-ulcer therapy.

SEBELLA* TABLETS

Aluminium Hydroxide with Belladonna and Phenobarbitone

Supplied: Bottles of 50 and 250

Wyeth

JOHN WYETH & BROTHER LIMITED, LONDON

(Incorporated in England with Limited Liability)

Indian Branch: Steelcrete House, Dinshaw Wacha Road, Bombay 1.

*Trade Mark

J. 59

a PICK-UP

after day's tiring work..

Rx Phosphoton

CIPLA

Tonic Restorative

- REFRESHING
- INVIGORATING
- APPETISING

PACKAGES
16 oz., 8 oz. & 4 oz.
BOTTLES.

Phosphoton is an excellent combination of Vitamins, Glycerophosphates, the stimulating nerve tonic Kola, the appetite giving Nux-Vomica and Glutamic Acid in a very palatable form.

Phosphoton removes fatigue and is refreshing, invigorating and appetising. Phosphoton can be taken either alone or diluted with water.

A PRODUCT OF
Cipla
BOMBAY-8.

LITERATURE SENT ON REQUEST.

Messrs. Advani Private Ltd.
3D, Garstin Place, Calcutta-1.

Another proposal is to upgrade Senior Class III into class II officers and fill the vacancies in class III with G.F.A.M.s, D.M.P.s, etc.

But one thing is certain that Government does not want to allow the sanctioned posts, on either side to remain vacant.

We are fully conscious that in spite of the fact that considerable progress has been made in the matter of providing staff quarters, we still require to do more and so quite recently Government has sanctioned an aggregate of Rs. 42·00 lakhs for the construction of quarters for nurses in various districts of the State as well as made several other concessions to them with regard to the period of their bond, similarly as for other staff.

In the matter of Resident Medical Staff in Medical Colleges, Government appointed a committee with the Surgeon General as its Chairman to examine the question of the pay scales and living conditions. I am glad to say today that not only has the committee completed its work much before the scheduled time, but their recommendations are also in the final stages of acceptance. Moreover on the top of the new J. J. Building, we are constructing a new floor for accommodating the resident medical staff.

There are several salient features, besides those already discussed above, of our progress in recent months. Maharashtra's medical and public health facilities range from 14 per cent to 20 per cent of all India's and most of them are the highest individually for any one State in the country. We have decided to add over 4,000 beds in various hospitals of the State for which nearly Rs. 3·00 lakhs have just been sanctioned which will help to complete the process of not having any surplus patients lying on the floor. After the process is completed, we shall have as many as 26,000 hospital beds in the State.

We have made much progress in organising Surgical Camps and Eye Camps. Now instead of only two Surgical Camps in the year, we shall have four of them, one in each division, in areas where surgical facilities are not too near at hand. In the Eye Bank at J. J. Hospital nearly two dozen operations have been performed and over 100 applications received. I am glad to reveal that we have received a small stock of cornea from U.S.A. to supplement our stock.

I was most pleasantly surprised during my visit to Amravati hospital recently that they have also picked up the idea and started corneal grafting operations and done better still by the fact that cornea have actually been removed from the useless eyes of the living with their consent for transplantation on those to whom they could help to restore eyesight. This is a most remarkable instance of human sacrifice.

Since so much blindness is preventible, we are also planning to do a lot in the direction of Ophthalmic Hygiene. We are considering introducing Ophthalmic training in the course of Midwives, Social Workers, Health Visitors, etc., and introducing a system of registering opticians. We have also made commendable progress in such specialities, as plastic and hare lip surgery, physiotherapy, vocational and occupational therapy, etc.

Another scheme in which our progress has been very promising is in the promotion of medical benefits to insured industrial workers. Today nearly 6·50 lakhs are under the scheme in Greater Bombay, Thana, Ambarnath and Kalyan and another 50,000 in Nagpur, Akola and Wardha.

I am very glad to disclose that before the year is out, Nagpur will be the first division in the State to have the ESIS scheme expanded to cover the members of the families and arrangements and preparations for the implementation of the scheme are already well in hand. When fully implemented, the scheme will cover a total population of over 1·50 lakhs. In addition a Government hospital for insured workers will also be built at Nagpur and for which land has already been selected.

So far as Greater Bombay, Ambernath, Kurla and Thana areas are concerned, we have 1,600 panel doctors, 14 hospitals where beds are reserved, 500 general beds and 500 for T.B., six diagnostic centres. 6,000 patients were treated in hospitals and 38 lakhs as outpatients last year. The 600 bedded M. G. M. Hospital, Parel, is nearing completion. We have just started construction work on a 200 bedded hospital at Worli; another 200 bedded general hospital at Mulund and a 500 bedded T.B. Hospital at Chembur have been sanctioned. Two more diagnostic centres in the North Bombay have been sanctioned and are to be added. One more T.B. Clinic at Ghatkopar has started; 250 more general beds are under consideration. The schedule of drugs has been enlarged. Other suggestions that you have made will be considered. Your suggestion for a college of Industrial Medicine is an interesting one and it will be examined. But I hope you will agree that we are doing the maximum possible for the promotion of the scheme and for its better working in every way.

Another problem on which Government is devoting much attention is the control of tuberculosis. Separate State Board for the control of T.B. has been set up and which had its inaugural meeting at Nagpur on 22nd.

So far as Maharashtra is concerned, we have some of the finest institutions and hospitals, dispensaries and clinics for tuberculosis in the country. The State has all types of institutions—Governmental, municipal and private. We have over 25 hospitals or wards in hospitals where tuberculosis is treated. The accommodation provided is for over 5,000 beds which is the largest number of beds for T.B. for any one State in the country. In addition, we shall have between 2,000 to 3,000 beds more for T.B., the process has already started as detailed later.

We have excellent institutions. The Tuberculosis Control Unit and Centre at Nagpur, the only one of its kind in India, has made impressive progress with the assistance of the T.M.C. and the W.H.O., both on the curative and preventive side. It is the only Centre in Maharashtra where also health visitors are trained for tuberculosis work.

A remarkable feature has been the organisation of what are called medicine centres, both in and out of the city of Nagpur, where the health visitors give them treatment at home and periodically visit them. Occasionally the patients are called to the Centre for check up and concessional fare is arranged for them.

Besides this Nagpur Centre, we have other fine Government institutions like the Chest Hospital at Aundh near Poona, the T.B. Sanatorium at Buldana where occupational therapy in a small way brings cheer into the lives of the ailing; another spacious sanatorium at Mominabad in Bhir district; the hospital at Gondia in Bhandara district; the special T.B. Hospital at Amravati and a number of spacious wards in various other places.

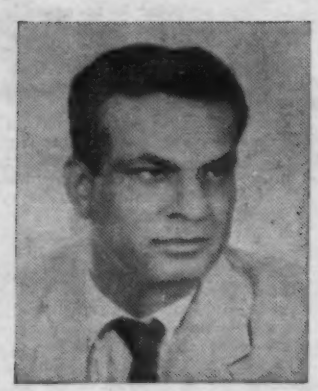
There are also several large private hospitals like Sarvodaya Hospital, Bel-Air at Panchagani, Wanless Wadi near Songli, T.B. Hospital at Talegaon, Red Cross Hospital at Ahmednagar, Municipal Hospital at Sewree and a host of others.

On the preventive side, the best measure has been B.C.G. Vaccination and by the intensified programme of our Public Health Section, we have been able to cover 16 out of our 26 districts completely and the remaining partially and which are also progressing rapidly, to complete the coverage. There are in all, 14 mass vaccination teams working in the State of which four are in Vidarbha, three in Marathwada, six distributed over Bombay and Poona Divisions and one in Greater Bombay. Each team comprises of nine members from the doctor down to the peon and inclusive of six technicians each.

Since mass contact through home visits and domiciliary treatment is the best and the only ultimate resort, Maharashtra has been setting up and is encouraging to set up a number of clinics in different parts of the State. Twelve such clinics have been sanctioned in the State, of which several have started functioning already. There are also T.B. clinics of 12 beds each

DR. R. N. COOPER,
CHAIRMAN, RECEPTION COMMITTEE

DR. SURESH C. SHETH,
PRESIDENT OF THE CONFERENCE



DR. C. L. JHAVERI
ORGANISING SECRETARY

at Aurangabad, Jalna, Parbhani, Nanded, and Latur in the Marathwada area, everyone equipped with X-ray. In Vidarbha, they include those at Akola, Yeotmal and Wardha and at both Akola and Wardha the clinics have started functioning while at Yeotmal, it is under construction. In the Bombay region the clinics have been sanctioned at Sholapur, and Nasik and the one at Nasik has recently started functioning. We have recently started a new T.B. clinic at Ghatkopar in Bombay.

In addition, there are quite a number of private T.B. clinics in the State which include the best one at Sewri run by the Maharashtra State Anti-T.B. Association which has been liberally assisted by Government. Municipal Corporations and some Municipalities and District Local Boards also run their own T.B. clinics which are assisted by Government, as well as a number of other private ones, scattered in different parts of the State.

Recently we have sanctioned a full-fledged Occupational Therapy Department at Aundh near Poona. In addition, we are acutely aware of the importance of rehabilitation measures during and after treatment. We are also considering that after the patient is discharged from the hospital, follow-up work, to watch that he does not relapse, may be continued at Primary Health Centres through which also we are now beginning the practice of making mass contacts through domiciliary visits. We have started the work in Nagpur region in several areas with the help of one mobile mass miniature radiography unit we have.

But much is required to be done. For example, we need a far larger number of Health Visitors for T.B. work than what we have at present in order to reach the homes of people for the purpose of such contacts.

In order to do so we are considering the provisions of mobile vans, some of which may be equipped with mobile mass miniature radiographic units which have to play an exceedingly important part in the promotion of anti-T.B. work.

We have one such unit already operating in Nagpur, but we require several others if we hope to make the programme at all effective. The Government of India have agreed to provide us with two more mass X-ray units and are considering our requests for 2 trucks equipped with such units. Another problem is that in order to make efficient use of such units there is great need for properly trained X-ray technicians.

The conference made many useful recommendations. It recommended concentrating on the age group of 15 years or less for B.C.G. vaccination (already 1·11 crores tested and 36 lakhs vaccinated).

Recommended securing co-operation of Maternity Homes for the purpose. Government is already considering starting a small B.C.G. Unit to its Maternity Homes.

Recommended taking of assessment of the effects of B.C.G.

Recommended increase in the B.C.G. clinics from 14 to 26, i.e., one in each district, subject to Government of India assistance.

Recommended consideration for provision of one or two mechanics to look after X-ray and other machines.

Recommended provision of one van for each Division with mobile mass miniature radiography unit after sufficient safeguards are taken for ensuring its utility and proper running.

Recommended revision of rules for admission and period of stay. At present, a large number of cases are allowed to stay for six months and more, giving no chance to others. It was, therefore, thought that the period of maximum stay should be reduced to two months or for not more than five weeks after the temperature gets down. The admissions should be made on the merit of the case, at the discretion of the doctor in charge, subject to exceptional cases.

Recommended the importance of co-ordination between the T.B. Hospitals and T.B. Clinics for the purpose of domiciliary treatment.

Recommended taking eligible grants from the Government of India for anti-biotics and anti-tubercular drugs for providing civil hospitals and Government clinics during the remainder period of the Plan.

Recommended taking eligible grants from Government for providing supply of anti-tubercular drug to volnntary organisations doing T.B. work and private practitioners approved by Government, provided they are prepared to work under the direction of the nearest Civil Hospital. Government is looking into these immediately.

Recommended having one training centre for health visitors attached to each Division where there is a teaching hospital; also recommended quarters for the trainees.

Recommended ways and means of securing greater measures of co-operation from voluntary organisations—starting branches of State T.B. Association in all districts, that is, to revive them where they already exist and to create where they do not.

Recommended that the members of the Board should submit names of doctors who will be willing to render voluntary services, with drugs provided by Government to them for use, particularly in rural areas.

I would refer to the Family Planning and Blood Bank recently inaugurated by the Chief Minister in Bombay, in which I would earnestly seek the fullest extent of your co-operation to make them the success that they deserve to be in view of their vital importance towards

the solution, one of a social economic problem, the other of saving numerous lives by timely transfusions. Already both the campaigns have got off to a flying start and a great amount of enthusiasm has already been generated and a large number of sterilisation operations on the Family Planning side and blood donations for the Blood Bank drive, have already taken place. A number of new centres both of Family Planning and of Blood Bank have been opened and more are proposed to be opened during the campaign period.

In the several Vasectomy Camps and Family Planning Seminars I have opened, I have been surprised by the extent of the response. In several places, vasectomies are done at the rate of 100 per day and hundreds of delegates attend the seminar.

Blood collection response is also very good. At Sachivalaya, over 500 employees have donated their blood. The other day timely blood transfusion saved the lives of many who had suffered burns from the explosion in the city.

With regard to your recommendations for better outpatient facilities, I hope you will appreciate the fact that we have recently provided a new spacious Outpatient Ward at the J. J. Hospital and we are doing likewise in several other hospitals in the mofussil as well. But in any Outpatient Ward in any hospital in the world, a certain amount of waiting cannot be avoided and wherever there was an undue amount of delay we have tried to minimise it as much as possible.

Your suggestion regarding small investigation outfits in the Outpatient Department will be examined. I may mention here that Government has under active consideration the formation of a Records Library, the nucleus of which has already been started at the J. J. Hospital.

We are fully conscious of the service rendered by the Honoraries and those in some parts of the State, notably at the Medical College at Nagpur, the biggest medical institution in the State and the country and perhaps in Asia, the system of Honoraries does not exist, Government is fully aware of the valuable services being rendered by them, particularly in our hospitals in Bombay and means to make no change for the present.

I am thankful to you for the pleasure your invitation has given me to hear you and to say "hear hear" to you once again for the fine work you are doing. I wish your deliberations a great achievement of an instructional purpose, so that the Indian Medical Association may also be a useful link of association between Government and the medical profession and have pleasure to inaugurate your this Conference."

Presidential Address

Dr. Suresh Sheth, the president of the Conference in his address said the following amongst other things :

"At the outset I extend a cordial welcome and offer my sincere thanks to the Hon'ble Minister of Health Shri Homi J. H. Taleyarkhan for inaugurating the 7th Bombay Territorial Conference of the Indian Medical Association today. He has spared the time inspite of the heavy demands of his office. I will be failing in my duty if I did not mention that since he assumed his office a few months ago, he has applied himself heart and soul to the problems of the health administration of the state and is doing his level best to improve the quality and quantity of medical relief in all directions. He has always given a ready and sympathetic ear to our requests, and we always look forward to a successful outcome from our negotiations.

I also welcome Dr. V. R. Khanolkar, our worthy Vice-Chancellor of the Bombay University, whose magnificent achievements in the field of cancer research are known to all of you.

I also welcome Dr. R. V. Sathe on his recent election to the office of the President of the Indian Medical Association. We are fortunate in having now five Presidents from Bombay. It is an eloquent testimony to the high status Bombay enjoys in the Central Association.

I have before me the elite of the local medical profession and besides me, the Head of the Health Administration of our State. I wish to avail myself of this opportunity to refer to some urgent problems facing us at the present juncture.

We have in our city the Employees State Insurance Scheme working for over six years and at the present moment over 6 lacs insured persons are covered under the Scheme. The medical facilities provided under the scheme are elaborate and well planned but in certain directions they need to be improved upon. First and foremost is the necessity of better relations between the administration and insurance medical practitioners who are the chief pivots on whom the scheme rests. The Drugs Schedules laid down for the use of the Insurance medical practitioners need to be liberalised so that they can prescribe full scale medical treatment for the insured persons under their care.

The E. S. I. diagnostic centres need to be increased at an early date and the existing ones to be enlarged in order that the over-crowding which exists in some of them may be removed. Adequate facilities for examinations and investigations at the centres should be provided, so that better and more efficient service may result. At present there is no liaison between the Diagnostic Specialists and the hospitals where the insured person is admitted for treatment. Ways and means should be devised in order to ensure the continuity of diagnosis and treatment, so that as a result, the worker may benefit.

We have now before us, the early prospects of two industrial Workers' Hospitals, viz., Mahatma Gandhi Memorial Hospital and Worli General Hospital. Other hospitals will follow in due course. I submit that in the staffing of these hospitals the Diagnostic specialists who have worked under the Scheme for long periods should be preferred, so that their long experience may be utilised.

We have, in Bombay, a very large number of industrial workers, and we will soon have several hospitals meant for them. It will be in the fitness of things if a College of Industrial Medicine be established in our midst in conjunction with these hospials. An institution for the study of industrial medicine will lead to its progressive growth and development in the country.

I now turn to Medical Relief. There is an urgent need of removing the over-crowding in the outdoor and indoor departments of our hospitals. A Public Hospital cannot be built in a day, but surely out-patient departments can be enlarged, better staffed and better equipped for clinical investigations. If better type of investigatiions can be conducted on the spot and the patient's line of treatment chalked out by the physician in charge of the out-patient department, a part of the pressure of the in-patient admission will be eased. This will necessitate the setting up of small investigation outfits in the outpatient departments in charge of trained officers, but the results achieved will lie well worth the outlay involved.

Some arguments exists as to the relative values of full-time and honorary staff in our hospitals. There have been several efforts at obtaining good men for full-time appointments in our institutions, but salaries offered have not proved sufficiently attractive to induce them to accept. The lure of the private practice with its limitless emoluments is hard to discard. Under the circumstances, till some distant future, the dual policy of having both the systems operating in the same field must persist. Both have their relative advantages, but the benefits of the services of top grade honoraries are so paramount that they must be allowed to continne for a whole in public interest.

The provision of rural medical relief is hot on the anvil of public controversy at the present moment. India is a land of villages and it is the duty of government to provide medical relief in rural areas. The crux of the

problem is that we have not a sufficiency of qualified doctors and a very small fraction, almost a negligible quantity, is willing to settle down in the villages.

Government are contemplating the restarting of the now extinct Licentiate Course, and perhaps compelling the licentiates to village practice. I ask in all seriousness, is it possible? What is to happen if the new licentiates will flock to the cities and refuse to go to the villages? The other suggestion is to compel the medical graduates to accept rural service for two years after passing. This can certainly be done, but the compulsion, if enforced, will deprive some of the top students who wish to take up post-graduate studies and obtain higher qualifications, from doing so. The Medical Council of India has always pleaded for one uniform qualification in Allopathic Medicine, and it is a very proper decision. The suggestion to restart a licentiate course is most retrograde and is not in the best interests of either the public or the medical profession.

The proper procedure to follow in order to supply adequate medical relief to the rural population is to turn out more graduate medical men and give them sufficient attractions to settle in villages. They should be provided proper quarters, suitably furnished, adequate emoluments, leave for refresher courses of study, and facilities for their children's education (by stipends). They may be engaged on a full-time basis and a special cadre be created for the purpose called 'Rural Medical Service'. Then only this knotty problem will be solved.

An important factor in the maintenance of public health in the State is the Medical Officer, employed in the service of the Government. There is an acute shortage of officers in this cadre owing to the inadequate salaries available in the service, and it is high time the salary cadres are revised and raised to a suitable level.

The purity of water supply plays an important part in the maintenance of public health. The prevalence of water-borne diseases like Typhoid, Cholera, Dysenteries, and Infective Hepatitis, whether in a city or village, is a serious matter; and as water pollution is largely responsible for the outbreak of these virulent diseases, the necessity of ensuring a cent per cent purity of water supply cannot be over-stressed.

There is much talk about the paucity of medical research. There are, in my opinion, two directions in which it can be speeded up. Government and private munificence should provide adequate grants to research workers and also provide ancillary staff to help in the work. It is only by making the research worker sure of his subsistence that he will be able to devote his full time to research problems.

The Indian Medical Association has worked out and submitted a comprehensive scheme for the utilisation of its members in the work of Family Planning, and it is my sincere hope that the Scheme will be accepted at an early date.

We have, in Bombay, a membership strength of 1,096 doctors, and the number is going up daily. It has been our earnest desire to have a Building of our own. We are deeply indebted to the Chief Minister, Shri Y. B. Chavan, Government of Maharashtra and Dr. Jivraj N. Mehta, Ex-Finance Minister of Bombay State, for the free grant of a plot for our Building at Worli."

"Ourselves"

Dr. C. L. Jhaveri in his speech about 'Ourselves' said the following:

"The parent body established in the year 1928 by a few patriotic stalwarts has grown tremendously in its popularity and has numerical strength of about 30,000 medical men spread out all round the width and breadth of this sub-continent. This national organisation renders yeoman service to the medical profession and the suffering humanity of our country.

The Bombay Territorial Branch established in the year 1947 has been regularly holding conventions since

Dr. R. V. Sathe (left), President-Elect, Indian Medical Association, and Dr. V. R. Khanolkar (right), Vice-Chancellor, Bombay University, Who Received Felicitations.

1954. It represents the voice of about 1,200 medical men spread out in Greater Bombay in the four branches, viz., the Bombay branch, the West suburban branch, the Ghatkopar branch and the Mulund branch. A special status of a State Branch was given to this territory by the Central Executive of the Indian Medical Association because of its unique status, which is reaffirmed again this year by the Working Committee of the I.M.A. Today we have about 15 of our members representing us at the Central Council of the Indian Medical Association and two of our members represent at the Working Committee. The Bombay Territorial Branch has the privilege of giving six Presidents to the All India Body and many more Vice-Presidents. The Indian Medical Association with its 17 State Branches and Territorial branches and about 537 local branches works for the rights and the privileges of the medical profession practising the modern system of medicine.

Our members are actively working in the Employees' State Insurance Scheme since 1954 and our representatives in various committees work actively for the efficient execution of this welfare scheme and try to rectify various lacunae which often arise in its administration. We would appeal to the members of the medical profession who have joined the Employees' State Insurance Scheme and are not the members of the Indian Medical Association to enroll themselves and help us in the smooth working of the scheme.

Medical Examiners' Appointment by the Life Insurance Corporation has still remained a controversial issue. Our representatives try their utmost to get maximum representation in the appointments and we appeal to all medical men who are either Examiners or Referees to join us and bring to our notice their various difficulties.

Telephone Advisory Committte appointed many years ago has helped a large number of our members in securing priority and installation of this vital instrument by the active assistance of our representative and we request our members to approach our esteemed representative in matters of Telephone allocation.

We have been actively helping our members with generous co-operation of the C Ward Medical Association in getting prompt renewal of various licences including spirituous preparations, opium preparations and motor car licences. We deem it necessary that more such facilities be extended to our colleagues in various other necessities and request our members to make the maximum use of this facility.

Knowing as we do the urgent necessity to control the ever increasing population we solicit the Government to ask for more and more co-operation from the medical profession and especially the members of the Indian Medical Association. After due consideration, we believe that the surgical approach is the best approach whenever possible looking at the economical, social and the hygienic way of our living.

This body fought ceaselessly for about 15 years to convince the British Government to eradicate the dual system of imparting modern medical education, i.e. the Licentiate course and the Degree course. Finally it was happy to learn for our colleagues that we will have one caste of medical men serving the rural and the urban population. We were equally relieved to learn that one type of medical men will serve the teeming millions and there will be no short and long term courses which will be detrimental to the cause of medical education and a disservice of the type of a half-baked and a full baked bread for the population.

The human life in a village is as important as the one in the city. With the ever expanding and progressive economy, with the constant race to keep pace with the modern times, a fight to keep pace with progress in Science, it is inconceivable for a layman, leave aside the politicians, to understand the revival of the licentiate course. The remedy to serve the village masses does not lie in creating cheaply and poorly trained doctors, but either in shortening the ever increasing span of medical education or increasing the number of medical colleges or introducing the double shift or giving better and lucrative terms of service to the doctors desirous of going to the villages or requesting the retired medical personnel to go to the villages with the same emoluments as before retirement.

The degree course in medicine has increased from four to five and half years as at present. Inspite of increase in the course of study the status offered by the University has remained the same. If we need more qualified doctors is it not possible to reduce the degree course by one year which will automatically increase the number of doctors by 20 per cent in 5 years and increase the tenure of post-graduate course for duly qualified medical men? Can we not convert well equipped and well staffed hospitals for teaching the clinical subjects?

There is no guarantee that the licentiates will prefer to serve the villages as is evident from the previous experiences. Even the recent experiment of a mixed course has failed hopelessly to solve this tangible problem and has proved a fallacy in all minds. With the W.H.O. experts often visiting our country and the constant vigilance kept by various international health organisations and the medical educationalists, it cannot be understood how we can introduce this dual system of medical education.

Hence we request the authorities at the helm of our Government to abstain from hastily introducing the Licentiate course. Lest we will hear at various platforms in the colleges and the various State and All India Medical Conferences after 5 years, a call to scrap the course or to revitalise the same and extend better amenities to those doctors for more refreshing knowledge and privileges to prosecute further academic career.

There is a spurt to introduce regional languages to impart medical education in various states. We are not against having medical education in modern tongue but we definitely fear its effects. Medical education should be imparted in one common language only in the whole country. The proposed language should be acceptable for studying other academic branches of education like Engineering, Legal and Technical. The parochial attitude and over-enthusiasm to translate the existing scientific medical books has many unsurmountable hurdles like the copy rights, the willingness of the author, and finding of appropriate terminology acceptable to the teacher and the taught and the public at large. Medical studies in regional languages will stop a free exchange of thought and understanding in the medical world of India, leave aside the International status.

Maharastra State Medical Council will be formed in a short time. We request our Health Minister to call the representative of this organisation before the final implementation of the Maharastra State Medical Act. It will be desirable that due representation in the governing council be given to this organisation from the whole state. It is high time that a fresh Maharastra State Medical Register is prepared containing all the names of the medical men practising in our State.

It will not be out of place to request our representatives and the State Government to press for a common register containing the names of all the practitioners of the modern system of medicine, to be maintained by the Indian Medical Council.

Fortunately for us, our Government and especially the Health Ministry has given due recognition to our organisation by inviting our members in the Employees' State Insurance Scheme, Life Insurance Corporation, the Telephone Advisory Committee. Family Planning Board of our State, the All India Leprosy Board, and the Drug Advisory Board. We feel that the Drug Controller of our State should seek our co-operation in problems involved in drug manufacturing. The problem affects ourselves and our prestige vitally and hence the health of the masses.

We request the Government that we may be allocated a seat in the University Senate and the Legislative Council. It is well known that Doctors are popular with the masses and their co-operation might lend good service to the people.

On behalf of myself and my colleagues, I make a fervent appeal to all who are here and to those who are unable to attend, to make special efforts to see that every medical men practising in our city and our state enrolls himself as an active member and works for this Organisation in the cause of service to 'OURSELVES' and the Public.

In the end, it will not be amiss if I were to remind my Friends that a huge responsibility lies ahead of us all, to construct a Building for 'OURSELVES' on the plot of land given to us as a magnanimous donation by our beloved Chief Minister Shri Y. B. Chavan. May I request you all to send your generous contribution for the speedy realisation of our ideas—Building for 'OURSELVES'.

Resolutions

The conference passed the following resolutions:

1. Sub.: *Short term course of Medical Education*

"Resolved that this Conference disapproves the move of the Central and some of the State Governments to revive the Licentiate course of Medical Education in the country and appeal to them not to take such a retrograde step as it will lower the standard of medical education and medical services both to the urban and rural population of the country."

2. Sub.: *Teaching of Scientific Medicine in Regional Languages*

"Resolved that this conference views with grave concern the attempts of some of the State Governments in the country to impart medical education in regional languages, as it will cause a setback in the present progress of medical education and research. Such a step will cause deterioration of standard of medical education and production of efficient medical men and first class teachers in medical subjects. It will stop the easy flow of ideas and medical literature not only in international field but even amongst the various states of this country. Such a move does not envisage production of text books of standard quality, revised editions, to keep abreast with advances in medical sciences, in spite of tremendous expenses involved in producing them in regional languages."

3. Sub.: *Bombay Medical Council*

"Resolved that this Conference requests the Government of the State of Maharashtra to give a representation to the Co-ordination Committee of the Maharashtra State, Indian Medical Association on the Maharashtra Medical Council whenever the new Council be formed."

4. Sub.: *Representation on the Senate of University of Bombay*

"Resolved that the Conference requests the Government of the State of Maharashtra to give a representation to the Bombay Territorial Council of the Indian Medical Association, on the Senate of the University of Bombay."

5. Sub.: *Employees' State Insurance Scheme.*

"(a) Resolved that this Conference requests the Government of Maharashtra to adopt the Panel system for medical service under the Employees' State Insurance Scheme (ESIS) not only in the new areas where the scheme is to be extended but to change over to it, in the areas of the State where service system has been adopted.

(b) This Conference requests the Government of India, the Employees' State Insurance Corporation and the State of Maharashtra as for his family, as since these fees were fixed, the cost of drugs, maintenance of clinics and the general cost of living have gone up considerably.

(c) This Conference further requests the Government of Maharashtra and E.S.I.C. authorities to devise ways and means for registration of all insured persons with Panel Doctors."

6. Sub.: *Appointment of Life Insurance Medical Examiners*

"Resolved that this Conference views with regret the discriminatory method of appointing Medical examiners by the Life Insurance Corporation of India and demands from the L.I.C. of India and the Government of India to appoint practitioners of modern medicine, holding qualifications recognised by the Medical Council of India Act 1956 as amended and who apply for appointment as medical examiners and have necessary facilities for Life Insurance examinations."

BRANCH NOTES

EAST GODAVARI BRANCH—At a clinical meeting under the chairmanship of Dr. P. N. Rao, was held on 10-9-60. Dr. Sundara Sivarao, Professor of Pathology, S. R. Medical College, spoke on the Pathology of Typhoid Fever in Relation to Treatment. Dr. K. Veerabhadraiah demonstrated a case of Diaphragmatic Hernia.

The annual general meeting was held on 23-9-60. Major K. N. Rao, Director, Medical Services, Andhra Pradesh, addressed the members on Health of the Nation. Films on the Iron Cycle as revealed by the Electron Microscope and Advances in Neurology were shown.

Dr. P. Sivaramakrishna Rao, Secretary, presented the annual report and Dr. Sumithrarao, Jt. Secretary and Treasurer, presented the annual accounts. Both were adopted. The office-bearers elected for 1960-61 were: President—Dr. P. N. Rao; Vice-Presidents—Dr. B. Venkatraju, Dr. P. V. N. Raju, Dr. N. Ammannapantulu; Secretary—Dr. P. Sivaramakrishna Rao; Jt. Secretary and Treasurer—Dr. H. Sumithrarao; Central Council Representative—Dr. M. V. S. Prakasrao; State Council Representative—Dr. J. S. Prakasarao.

A vote of thanks was moved by Dr. H. Sumithrarao. The function closed with a dinner by Dolphin Laboratories.

ETAH BRANCH—A general clinical meeting was held on 15-11-60. Dr. M. N. Srivastava presided. Right members were present. There was a discussion on the operated case of Ovarian Cyst, besides other cases of clinical interest.

GORAKHPUR BRANCH—The annual meeting was held on October 30, 1960 under the presidentship of Dr. K. N. Srivastava. About 45 members were present. The following rare and interesting clinical cases were presented by the doctors: Dr. Kedar Nath Srivastava—Enteric Intussusception, Volvulus, Appendicitis, Intestinal Obstruction; Dr. R. K. Singh—A case of Syphilitic Nose, Congenital Lymphangioma, Bell's Palsy treated by Cortisone and Vasodilators; Dr. T. N. Saha—Osteogenesis Imperfecta, Congenital Cirrhosis of Liver, Tuberculous Bronchopneumonia, Congenital Rectovaginal Fistula. Congenital Heart disease with Patent Ductus Arteriosus; Dr. S. Singh—Thyroid Abscess; Dr. P. C. Srivastava—A Series of Cases of Breech Presentation. All the above doctors were heartily thanked by the President.

The following office-bearers were elected for the year 1960-61: President—Major J. N. Jaswal; Vice-Presidents—Dr. Miss Keith, Dr. S. Singh; Secretary—Dr. N. M. Seth; Jt. Secretary—Dr. Kameshwari Sinha; Treasurer—Dr. S. P. Agrawal; Librarian—Dr. Miss S. Dhillon; Auditor—Dr. B. P. Dube; Representative for Centre—Dr. R. K. Singh; Representatives for Province—Dr. Rajendra Prasad, Dr. K. N. Lahiri, Dr. Mrs. Mahendra, Dr. Nil Ratan Banerji, Dr. S. P. Agrawal, Dr. Janki Prasad, Dr. A. S. Bhalla.

In his Annual Report, the Hony. Secretary said that the year that had gone by was quite momentous in some respects. Never before had the scientific section been so active and all monthly meetings so marked by enthusiastic demonstration of ever increasing number of rare and interesting clinico-pathological cases. Special programmes like observance of World Health Day, Family Week and playing host to the 29th Session of National Academy of Sciences were also gone through in the past year.

GUDIVADA BRANCH—A meeting was held on 18-12-60 to celebrate Family Planning Day. Dr. N. Visweswara Rao presided. A symposium on Psychological and Social Aspects of Family Planning was initiated by Dr. T. L. Perumalla and Dr. L. Sarojini, Dr. Y. Sarojini, Dr. A. V. Raghaviah, Dr. Kusumbashvo and Dr. Norasinha Rao participated in the discussion.

GULBARGA BRANCH—A meeting was held at Shahabad on 13-11-60. Members were entertained to tea and dinner by the Manager, A.C.C., Shahabad and taken round the factory by him. The meeting ended with the vote of thanks by the Secretary, Gulbarga branch to the Manager A.C.C., Shahabad, Medical Officer, A.C.C. Hospital, and the Medical Officer, Shahabad.

HAZIPUR BRANCH—A general meeting of the branch was held on 13-11-60 under the presidentship of Dr. B. K. Prasad in order to elect the office bearers for the new session. The following office-bearers were elected: Dr. B. K. Prasad—President; Dr. K. P. Sinha—Vice-president and Representative to State Council; Dr. D. Prasad—Hony. Secretary, Treasurer and Representative to Central Council; Dr. B. P. Singh—Jt. Secretary.

HOWRAH BRANCH—The annual general meeting of the branch was held on 20-11-60. Office-bearers for 1960-61 were elected with Dr. N. N. Sinha as president (re-elected); Dr. B. Mukerjee, Dr. B. Chowdhury and Dr. B. Das—Vice-Presidents; Dr. B. Moitra as hony. secretary; Dr. S. Chatterjee, Dr. D. Dutta and Dr. N. Roychowdhury as hony. jt. secretaries. Dr. B. Moitra, Dr. D. Dutta, Dr. D. P. Mukherjee, Dr. S. K. Sen and Dr. G. Mukherjee as representatives to the Provincial Council and Dr. B. Moitra and Dr. D. Dutta as representatives to the Central Council with Dr. D. P. Mukherjee and Dr. B. Das as alternates. The annual report of the branch for 1959-60 shows that membership went up to 143. Two clinical meetings were held. Seven executive committee meetings, one annual general meeting and one special general meeting were held. Four meetings of E.S.I. Committee were held. Thirteen new members were enlisted.

JALGAON BRANCH—The annual meeting was held on 2-10-60. The annual report presented and adopted at the meeting states membership stood at 37. Dr. H. N. Shivapuri, President, I.M.A., paid a visit to the branch when members promised a total donation of Rs. 1,735·00 to the Central Building Fund. Nearly half of this has already been sent. A Triple Antigen Vaccination Centre was started. The accounts were presented and passed.

The following office-bearers for 1960-61 were elected: President—Dr. G. D. Bendale; Vice-President—Dr. Miss Y. Choudhary; Hony. General Secretary—Dr. D. R. Kulkarni; Jt. Hony. Secretary—Dr. P. M. Choudhury; Central Council Representative—S. D. Athavale; Territorial Council Members—Dr. D. R. Kulakarni, Dr. S. S. Mhalas, Dr. M. H. Sarode.

JAMNAGAR BRANCH—The following are the office-bearers elected for the year 1960-61: Dr. M. V. Rajapurkar—President; Dr. H. L. Patel and Dr. V. S. Chudasama—Jt. Hony. Secretaries; Dr. H. J. Nansey—Hony. Treasurer.

A meeting was held on 10-11-60 where the following clinical cases were presented: (1) Addison's Disease by Dr. S. M. Baxi; (2) Bilateral Psoas Abscess by Dr. H. L. Patel; (3) Phlegmasia Alba Dolens by Dr. S. R. Parikh; (4) Suspected Hermaphroditism by Dr. M. G. Shahade.

A meeting was held on 29-11-60 where amendment to the constitution of the Branch was discussed.

A meeting was held on 21-12-60. The following clinical cases were demonstrated: (1) Bilateral Ulnar Nerve Palsy by Dr. S. N. Shah; (2) Rodent Ulcer by Dr. G. H. Upadhyaya. (3) Chronic Appendicular Abscess by Dr. H. L. Patel, (4) Hydatid Cysts of Liver by Dr. H. C. Shah, (5) Cardiospasm in a child aged 10 years by Or. V. K. Gandhi, (6) Foreign Body Oesophagus—a sharp cuff button in a child ½ month old by Dr. H. L. Patel, (7) Foreign Body in Oesophagus—a large live fish in an adult by Dr. R. C. Bhatt.

JAMURIA BRANCH—The members of the branch held a condolence meeting in memory of Late Dr. G. B. Roy on 18-12-60. This meeting placed on record its deep sense of sorrow at the sad demise of Dr. G. B. Roy and expressed its heartful sympathy to the members of bereaved family. A copy of the resolution was sent to his family.

KALYANI BRANCH—A meeting of the branch was held on 28-11-60 to celebrate its special general meeting with light refreshments and music. Dr. L. B. Banerjee of Calcutta Medical College gave a lecture on Non-Tuberculous Diseases of the Lung. The meeting was attended by 60 doctors.

KANDARA BRANCH—The annual general body meeting of the branch was held on 5-12-60. Dr. B. K. Bhattacherjee presided. Office-bearers for 1960-61 were elected with Dr. B. K. Bhattacharjee as president; Dr. S. Dhar as vice-president and Dr. D. P. Chatterjee as hony. secretary. Dr. B. K. Bhattacherjee was elected representative to the Central Council and Provincial Council. The annual report for 1959-60 was adopted. Various scientific articles were read in the meetings during the year. The members were willing to start a family planning clinic in this area. The secretary was requested to move for the sanction of a health centre in the locality.

KANPUR BRANCH—A clinical meeting was held on 2-12-60. Dr. Roshan Lal Gupta spoke on Emergencies in Chest Diseases. This was followed by a film show on Siquil.

KARAD BRANCH—The annual meeting was held on the 1-9-60. Dr. G. N. Datar and G. V. Vaidya were unanimously elected as president and secretary respectively, for the year 1960-61. Six members of our branch performed 25 vasectomies at the Vasectomy Camp at Vadgaon on 9-11-60 and 10-11-60. The members of the branch also performed 45 vasectomies at the camp held by the Karad Municipal Borough, Karad, on the 3rd 4th and 5th of December 1960. Permanent arrangements to perform vasectomies and tubotomies gratis exist in this branch. A new Family Planning Clinic under the management of this branch will be shortly opened at Karad.

KARIMNAGAR BRANCH—A clinical meeting was held in the District Headquarters Hospital on 20-11-60 with Dr. Ahmed Hussain in the chair. The election to the State Branch was conducted by secret ballot.

Dr. Karan Pershad, demonstrated a case of Sublingual Calculus and the members discussed briefly the treatment to be followed. Dr. Ahmed Hussain demonstrated a case of Abdominal Tuberculosis who had hysterical symptoms also, with a discussion on the line of treatment.

After the meeting the members were treated to a dinner by the joint hosts Dr. Gopal Rao, Medical Officer, Primary Health Centre, Gundi, and Dr. C. Mohan Reddy, Medical Officer, P. H. C., Mallial.

K.G.F. BRANCH—The monthly clinical meeting was held on 18-11-60. Twentyeight members were present. Dr. B. Venugopal was in the chair. A symposium on Peptic Ulcer was held. The following took part: Dr. B. N. Krishnamurthy on Aetiology, Diagnosis and Treatment, Dr. H. A. Nagaraja Rao on Surgical Treatment, Dr. Rajendra Wats on Complications and Their Management. After a vote of thanks the meeting came to a close.

KHAMMAMETH BRANCH—The branch met at their monthly clinical-*cum*-dinner meeting on 4-12-60 under the presidentship of Dr. Mhd. Gouse, D.M.O. Dr. J. B. Simon, specialist in diseases of children, Government Hospital gave a versatile version of all aspects of Tubercular Meningitis in children, its diagnosis and treatment. Members asked various questions on the subject for which the speaker explained. The President at the end added his own experiences in the treatment of this disease.

The Secretary welcomed Dr. Acchamma George of Kerala, the famous Dental Surgeon, who in her regular itinerary of running free dental camp orrived in town and was invited to the dinner meeting.

Cases of interest were presented by Dr. J. B. Cranswick of the local Mission Hospital. The first was the same case of Tumour Abdomen exhibited in the last month's meeting later operated and found to be one of multiple cysts partly situated inside partly outside the peritoneal cavity. The second one also a Tumour of Abdomen was diagnosed as bilateral multicystic hydronephrosis.

Dinner was given by Dr. N. V. Sita Rama Rao, the secretary.

KUMARDHUBI BRANCH—A general meeting of the members of this branch was held on 30-10-60 at Kumardhubi Hospital. Medical practitioners from Nirsha area attended this meeting and joined as members of this branch. The following office-bearers were elected for the year 1960-61: President—Dr. (Mrs.) S. Prabhu; Vice-Presidents—Dr. S. K. Kar, Dr. S. D. Palit; Hony. Secretary—Dr. K. B. Das; Hony. Jt. Secretary—Dr. B. N. Sen; Treasurer—B. B. Sarkar; Auditor—Dr. B. B. Ghose.

MADRAS CITY BRANCH—A meeting of the Executive Committee was held on 17-9-60. 13 members were present. The minutes of the last meeting was read. The paragraph dealing with the request of the secretary to operate on the bank accounts singly was asked to be deleted. Then it was pointed out by Dr. B. Rama Rao that the minutes must be sent to the State Branch only after being confirmed, at the subsequent meeting of the committee. Two new members Dr. Kumari Edna P. B. Pinto and Dr. S. Kadar Sultan were admitted. Some routine business was transacted after dinner. It was decided to send a letter of congratulation to Dr. Janardhanan on his election as Professor of Anatomy

at the upgraded Anatomy Department, Stanley Medical College, Madras.

A committee to suitably congratulate Dr. D. V. Venkappa on his 80th Birthday with Drs. G. Sri Ramulu, K. Rama Rao, A. M. Sivaraman and K. V. Swamy (Convener) was formed. The house protested the election of a president of World Medical Association at a working committee of Indian Medical Association without consulting any branch.

A clinical meeting was held on 15-10-60 at the Common Hall of the Madras Medical College with Dr. G. Sri Ramulu, President in the chair. Dr. A. Srinivasan, additional professor of Medicine, Madras Medical College, delivered a lecture on Clinical approach to the diagnosis of Heart Disease. The lecture was supported by projection of slides. After the lecture there were a few questions which the lecturer answered.

MADURA BRANCH—The monthly meeting of the branch was held on 19-11-60, under the presidentship of Dr. E. S. Chellappa, Madurai. The secretary read the previous monthly meeting minutes. Dr. K. Bhasker Rau, Obstetrician and Gynaecologist, Government Women and Children's Hospital, Egmore, Madras, gave a lecture on The Abortions Problem.

MANDVI BRANCH—A meeting was held under the auspices of the branch on 16-11-60 to which medical practitioners of the city were invited.

Dr. C. J. Mehta, the chief speaker, spoke on the Preventive side of Tuberculosis.

This was followed by a film show. The following films were shown: 1. Care of Eyes; 2. Eyes that Hear; Blind Interlude; 4. Seed and Soil.

Dr. C. H. Kothari, the branch secretary proposed a vote of thanks, to the chief speaker.

MEDAK BRANCH—A clinical meeting was held at Pulkal Primary Health Centre, under the presidentship of Dr. Ibrahim Ali Khan. All medical officers from the District attended. Dr. V. Raghvender Rao, Hony. Secretary. informed the members about the Indian Council of Medical Research meetings at Hyderabad, and the Annual Conference of the State Branch of I.M.A. to be held at Kakinada. There was lively discussions on school health programme, doctors' benevolent fund, and insurance against diseases and accidents. The members unanimously agreed to establish the Benevolent Fund, to help the families of doctors in distress.

Dr. Bhoom Reddy, Medical Officer, Pulkal read a paper on Hydrocele and Its Simple Technique of Surgery in Rural Areas. He demonstrated a case of Auricular Fibrillation. The meeting concluded with a vote of thanks by Dr. V. Raghvender Rao.

MEERUT BRANCH—The annual general meeting of the branch was held on 19-11-60 in the Bhopal Singh Memorial Hall. Thirtytwo members were present. At the outset the members condoled the sad and sudden death of Dr. D. Chatterjee, Superintendent, Botanical Garden, Calcutta. Late Dr. Chatterjee was a brother of Dr. Major S. Chatterjee, a member of the branch. A copy of the resolution was sent to Dr. Major S. Chatterjee.

A group photograph was taken of the members. Proceedings of the last general meeting were confirmed. The annual report and the audited accounts for 1959-60 were adopted.

Office-bearers for 1960-61 were elected with Dr. R. R. Mital as president; Dr. S. P. Gupta as secretary; Dr. P. K. Caroli as joint secretary; Dr. C. M. Gupta as financial secretary; Dr. K. C. Jain as social secretary; Dr. R. C. Agarwal as library secretary; Dr. Suraj Bal as hony. editor; Dr. A. S. Maheshwari as representative to the Central Council; Dr. C. M. Gupta and Dr. S. K. Bhargava as representatives to the State Council. It was resolved that in the interest of citizens of Meerut Division, a faculty of medicine must be started in the newly proposed Meerut University.

MONGHYR BRANCH—A meeting was held at the residence of Dr. B. B. Bose, Lakhisarai, on 27-11-60 under the presidentship of Dr. K. P. Mitra when Dr. S. Sinha was elected to the State Council. Dr. Awadh Kishore Narayan Sinha of Patna gave a refresher course lecture on Uraemia and discussed the Problems of Cardiovascular Diseases.

MORADABAD BRANCH—A clinical meeting of the branch was held on 9-10-60 with Dr. Hans Raj in the chair. Interesting cases and x'rays were demonstrated by Dr. Harnam Singh.

A condolence meeting was held on 14-10-60 on the sad death of Dr. K. L. Tandon, an old practitioner of Moradabad.

A condolence meeting was held on 23-11-60 on the sad death of Dr. Shri Krishna, Civil Surgeon, Moradabad.

NABADWIP BRANCH—The following office-bearers have been elected for the year 1960-61 in the annual general meeting on 2-11-60: President—Dr. M. L. Kundu; Vice-President—Dr. M. Chakravorty; Hony. Secretary—Dr. N. N. Saha; Jt. Secretary—Capt. A. K. Nath; Auditor—Dr. S. Banerjee; Representative to the Central Council—Dr. M. L. Ghosh; Representative to the Provincial—Dr. N. N. Saha, Dr. S. N. Mukherjee, Dr. S. Banerjee.

NAIHATI BRANCH—The annual general meeting was held on 14-11-60 with Capt. A. Sen in the chair. The annual report and the audited accounts were adopted. Office-bearers for 1960-61 were elected with Dr. P. K. Bose as president, Dr. N. K. Saha, Dr. S. Ghosh, Dr. G. D. Mukherjee as vice-presidents, Dr. B. N. Sadhukhan as secretary, Dr. P. G. Biswas, Dr. B. K. Kundu as joint secretaries, Dr. A. K. Paul as treasurer and Dr. N. C. Ghosh as auditor.

The annual report of the branch for 1959-60 was adopted. It shows that six meetings were held during the year and membership slightly increased.

NILGIRI BRANCH—The monthly meeting was held on 12-11-60 at Pasteur Institute, Coonoor, with Dr. V. Kuruvilla, President, in the chair. Dr. (Kumari) C. P. Vani, Government Lawley Hospital, Coonoor, delivered a lecture on Prolapse of the Uterus and its Management. Dr. P. L. Jacob, Assistant District Medical Officer, Ootacamund, presented a case report of Rare Complications of Partial Gastrectomy and their successful management. A colour film on Atrial Septal Defects kindly made available by May & Baker (India) Private Ltd., was also projected. About 40 members were present. Dr. J. Viswanathan, Hony. Secretary of the branch proposed a vote of thanks.

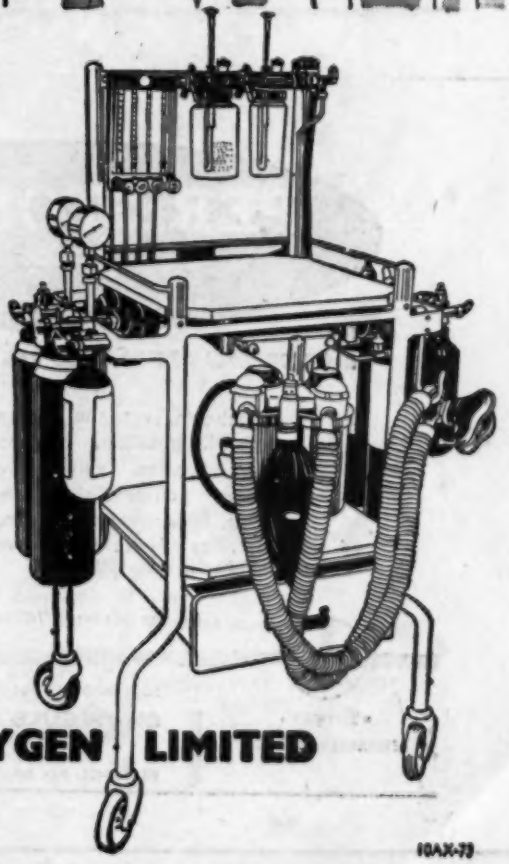
A special meeting of the branch was held on 14-12-60 at Government Headquarters Hospital, Ootacamund with Dr. N. Veeraraghavan in the chair. Professor Frank Fenner, Head of the Department of Microbiology, John Curtin School of Medical Research, Canberra, Australia, delivered a lecture on 'Evolutionary Changes in Virus and Host in An Animal Virus Disease'.

RAFIGANJ BRANCH—A general meeting of the branch (Gaya) was held on 20-11-60. The following office-bearers were elected for the year 1960-61: President—Dr. S. S. Das Gupta; Vice-President—Dr. M. Zafarul Islam; Hony. Secretary—Dr. Bajrang Sahay; Auditor—Dr. B. N. Sahay; Representative to the State Council—Dr. M. Zafarul Islam.

VIJAPUR BRANCH—A joint meeting of the Vijapur and Kadi-Kalol branches was held on 11-12-60. Twenty-five doctors from the two branches were present. Dr. Satish Patel discussed the importance of Rectal Examination in General Practice. Dr. M. J. Shah spoke on Common Eye Troubles.

Anaesthetists' Choice

The science of Anaesthesia today has at its command a wealth of specialised apparatus, undreamt of by the early pioneers of surgery. Indian Oxygen is proud of its services to the medical profession in India, in making available a comprehensive range of modern anaesthetic apparatus and medical gases. The Boyle apparatus illustrated, for hospital use, is conveniently mounted on a table with ball-bearing castors for easy mobility; now assembled in India to the same high standards as in the United Kingdom, this apparatus is normally available from stock.



INDIAN OXYGEN LIMITED

IOAX-73

THE "ANTISEPTIC"

A Monthly Journal of Medicine and Surgery

Founded by the late Dr. U. RAMA RAU in 1904

Consulting Editor : U. KRISHNA RAU, M.B.B.S., M.L.A. Editor : U. VASUDEVA RAU, M.B.B.S

THE 'ANTISEPTIC' the oldest independent medical monthly has been in continuous & regular publication for over half a century. It is contributed to by hundreds of eminent medical men and women in India and abroad.

THE 'ANTISEPTIC' is every month brimful with original articles, cases and comments, editorials and gleanings etc. Every annual Vol. has over 1000 pages of reading matter covering almost all branches of medical science, keeping abreast of progress

THE 'ANTISEPTIC' has achieved international reputation as an up-to-date journal and fearless exponent of the legitimate aims and aspirations of the medical and allied professions. Its tone is bright, fearless and strictly impartial.

THE 'ANTISEPTIC' is therefore being subscribed by over 12,000 medical men and women in India, Burma, Ceylon and Pakistan also in Africa, Arabia, China, Malaya, Italy, Tibet, U.S.A., U.S.S.R Medical Colleges, Medical Associations, Tea Estates etc are among the subscribers

VOLUME BEGINS EVERY JANUARY **PUBLISHED MONTHLY ON 6TH**

Annual Post Paid Subscription, Inland : Rs. 7-50, Foreign—Rs. 10-00 ;
Single Copy Re. 1-00 Payable in advance.

Editorial & Publishing Office 323-24, Thambu Chetty St., P.O. Box 166, Madras-1

PERISTON "N"

6% polyvinylpyrrolidone

(mean molecular weight 12600)

for

RAPID DETOXICATION OF BLOOD AND TISSUE

in

diphtheria, tetanus, dysenteries, typhoid, botulism, drug-poisoning, liver diseases, epidemic dropsy, ascites, poliomyelitis, encephalitis, burns, hyperemesis gravidarum, etc. Also, as a diuretic in nephritis-nephrosis, eclampsia, etc.

Infusion bottles of 100 cc.

BAYER

"Bayer"
LEVERKUSEN, GERMANY

SOLE IMPORTERS IN INDIA

CHOWGULE & CO. (HIND) PRIVATE LTD.

P.O. BOX 1478, BOMBAY 1.

BRANCHES: P.O. BOX 8943, CALCUTTA 13. P.O. BOX 1743, MADRAS, 1.

A wide margin of Safety & Low toxicity with a powerful

Antispasmodic **and**

Analgesic **effect**

Indicated in all painful spasms of the alimentary tract, severe migraine, angina pectoris, bronchial asthma and tenesmus — *In Biliary and Urinary Colic— and in Labour pains.*

Avafortan

ANTISPASMODIC & ANALGESIC

Avafortan contains a mixture of Iso-amyl ∝ -[N-(β-diethyl-aminoethyl)]-aminophenyl-acetate-bis-phenyl-pyrazolone-methyl-amino-methane sulphonate **(Avapyrazone)** and Sodium phenyl-dimethyl-pyrazolone-methyl-amino-methane-sulphonate.

ASTA

ASTA-WERKE A-G.,
Brackwede, West Germany

Detailed literature on request.

Manufactured in India by:
KHANDELWAL LABORATORIES PRIVATE LTD.
Bombay-12

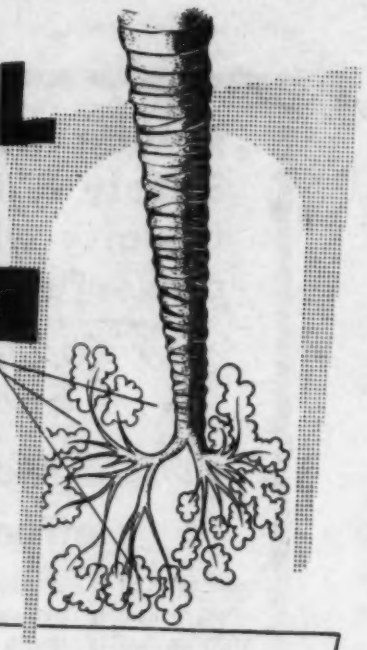
UNIDRINAL

for dramatic relief in

BRONCHIAL ASTHMA

WITH NO SIDE REACTIONS

Ephedrine	.. ..	32 mg.
Aminophylline	.. ..	97 mg.
Phenobarbitone	.. ..	32 mg.
Caffeine Citrus	.. ..	32 mg.



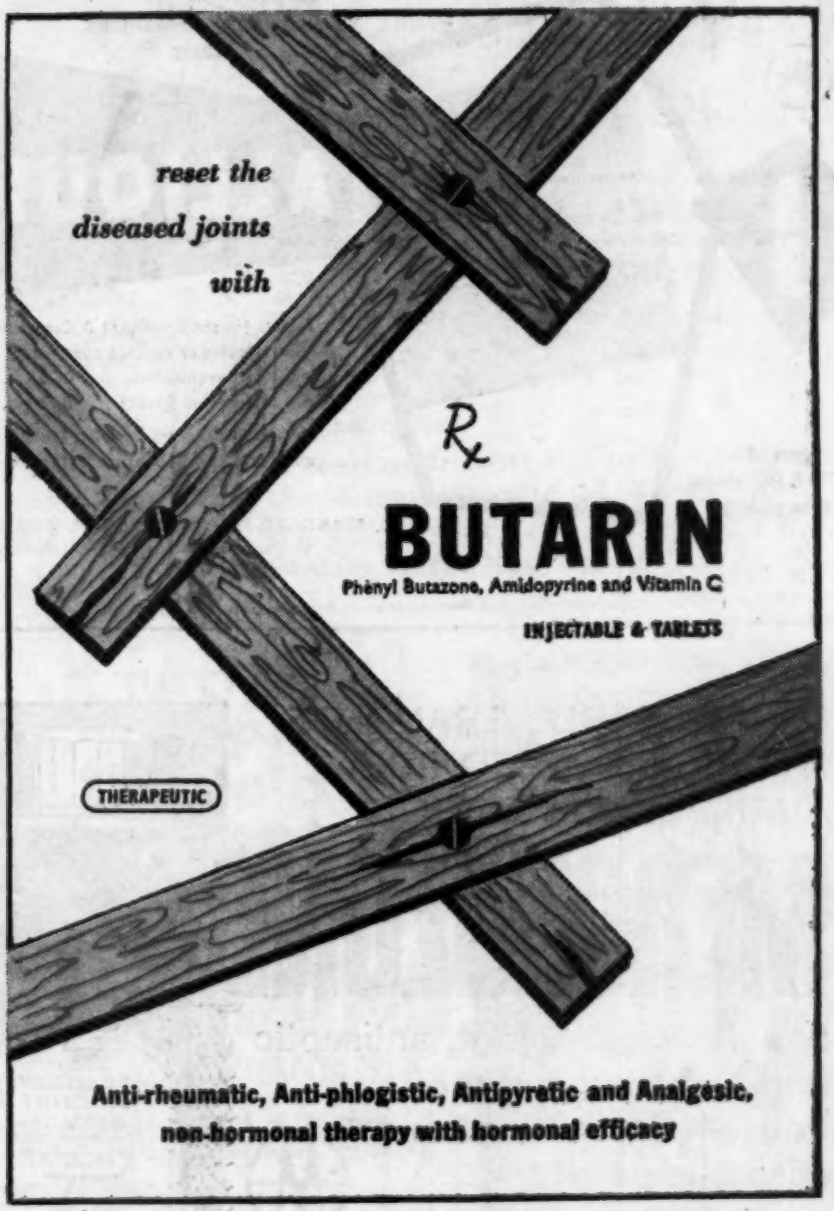
UNICHEM LABORATORIES 22 BHULABHAI DESAI ROAD, BOMBAY 26.

WHEN YOU NEED TRANSFUSIONS YOU CAN RELY ON CROOKES

THE CROOKES LABORATORIES LIMITED

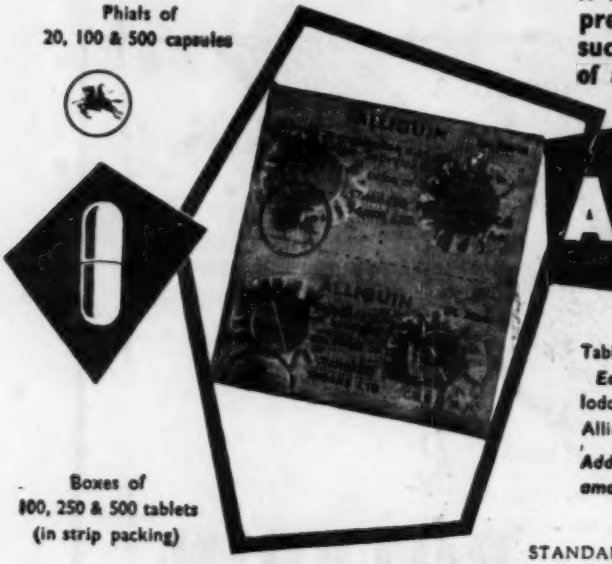
(Incorporated in England. The Liability of Members is Limited)

COURT HOUSE, CARNAC ROAD, BOMBAY-2



Detailed literature on request from:
THERAPEUTIC PHARMACEUTICALS
38, Suren Road, Andheri,
BOMBAY: 58

Phials of
20, 100 & 500 capsules



A new
preparation for
successful treatment
of amœbiasis

ALLIQUIN

Tablets (in strip packing) & Capsules.
Each tablet or capsule contains :
Iodochloroxyquinoline ... 0.25 gm.
Allium Sativum (garlic) ... 0.12 gm.
Addition of Allium Sativum (garlic) increases amœbicidal action of Iodochloroxyquinoline.

Boxes of
100, 250 & 500 tablets
(in strip packing)

STANDARD PHARMACEUTICAL WORKS LTD.
67, Dr. Suresh Sarkar Road, Calcutta-14

MOST STABLE BRAND OF
HYDROGEN PEROXIDE
AVAILABLE IN INDIA

MERCKOZONE

popular disinfectant, antiseptic
and bleaching aid for
house-hold, medical and
cosmetic uses

Manufactured by
SARABHAI MERCK PVT. LTD.
In conjunction with **E. MERCK A.G.** Darmstadt, Germany.
Sales inquiries to: Sarabhai Merck Private Limited, 13 Wittet Road, Bombay-1

EPCOL COUGH SYRUP

For Prompt & Immediate Relief

COMPOSITION :

EPCOL (Fortified)

Each ounce contains :

Mepyramine Maleate	..	25 mg.
Pot. Antimony Tartarate	..	3 mg.
Codeine Phosphate	..	30 mg.
Ephedrine Hydrochlor	..	30 mg.
Calcium Hypophosphite	..	240 mg.
Pot. Gualacol Sulphonate	..	240 mg.
Tinc. Ipecac ..	..	15 mm.
Liquid Extract of Wildcherry, Glycyrrhiza and Vasak in Palatable Syrup base	..	q.s.

EPCOL

Each ounce contains :

Pot. Antimony Tartarate	..	3 mg.
Calcium Hypophosphite	..	240 mg.
Pot. Gualacol Sulphonate	..	240 mg.
Tinc. Ipecac ..	..	15 mm.
Liquid Extract of Wildcherry, Glycyrrhiza and Vasak in Palatable Syrup base	..	q.s.

Indications :

Soothe irritation, loosen bronchial secretion, facilitate expectoration, relieve Cough, Cold, Influenza, Bronchitis, Asthma, Whooping Cough and Coryza.

THE BRAHMACHARI RESEARCH INSTITUTE,

82/3, CORNWALLIS STREET, CALCUTTA-4.

Gram : "STIBINOL" Phone : 55-1363

a rational approach to cold control

CHLOR-ANTAMINE

⊂ PHENYLEPHRINE HYDROCHLORIDE

- Stops sneezing, relieves watering of the eyes.
- Relieves stuffed-up nose without topical treatment.
- No damage to mucosa.

Each 5 ml. contains:

Chlorpheniramine Maleate	U.S.P. 1 mg.
Phenylephrine Hydrochloride	B.P. 2.5 mg.
Flavoured Syrup Base	q.s.

Chemo-Pharma Laboratories Ltd., WORLI, BOMBAY 18

Now you can prescribe Horlicks again

FOR MANY MONTHS past Horlicks has been hard to get because of import restrictions necessary to conserve foreign exchange. ***But now Horlicks is becoming more easily available,*** and soon there should be plenty for normal requirements.

And so, once more, you will be able to prescribe Horlicks for your patients, as doctors throughout the world have been doing for more than 70 years. For Horlicks is the ideal food whenever nourishment is required in a form that will not burden the digestive system of the patient.

Horlicks is useful not only in acute illness and during convalescence, but in all conditions which are favourably influenced by correct dieting.

Horlicks

JWT-HL. 1234

BOAC

carries you on home leave in speed and comfort

Fly BOAC and start your holiday in the air. You'll travel by the world's finest, fastest jetliners.... enjoy wonderful food, comfort and really *personal* service...and if you wish—fly there by one route and return by another.

By BOAC you can break your journey—stopping over in Europe's most exciting cities *at no extra fare.*

Take Advantage of BOAC's Ticket Instalment Plan—

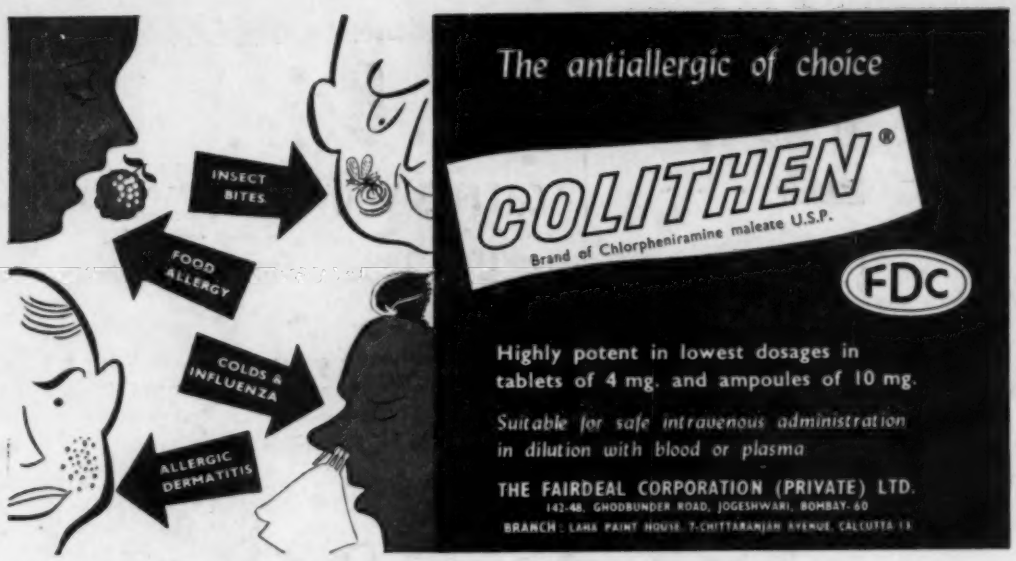
FLY NOW, PAY LATER!

Your BOAC Appointed Travel Agent and BOAC offices everywhere are at your service.

BOAC

takes good care of you

BRITISH OVERSEAS AIRWAYS CORPORATION
IN ASSOCIATION WITH AIR-INDIA AND QANTAS


INSECT BITES
FOOD ALLERGY
COLDS & INFLUENZA
ALLERGIC DERMATITIS
The antiallergic of choice
COLITHEN®
Brand of Chlorpheniramine maleate U.S.P.
FDC
Highly potent in lowest dosages in tablets of 4 mg. and ampoules of 10 mg.
Suitable for safe intravenous administration in dilution with blood or plasma
THE FAIRDEAL CORPORATION (PRIVATE) LTD.
142-48, GHODBUNDER ROAD, JOGESHWARI, BOMBAY-60
BRANCH: LAHA PAINT HOUSE, 7-CHITTARANJAN AVENUE, CALCUTTA 13

CALCIUM DEFICIENCY

CALCINOL

(Calcium-Phosphorus-Magnesium-Fluorine)

Endorsed by over 25 years' Clinical Experience

AVAILABLE IN THE FOLLOWING COMPOUNDS

CALCINOL	GRANULES	with	3,000	I. U.	Vit. D	per teaspoonful
,,	TABLETS	with	250	I. U.	Vit. D	per tablet
,,	POWDER	with	750	I. U.	Vit. D	per teaspoonful

Particulars from:

RAPTAKOS, BRETT & CO., PRIVATE LTD. WORLI, BOMBAY.

Printed by Sri Tarani Kanta Basu at Sri Gouranga Press Private Ltd., 5, Chintamani Das Lane, Calcutta-9 and published by him on behalf of the Indian Medical Association from 23, Samavaya Mansions, Corporation Place, Calcutta-13
Editor—Dr. P. K. Guha, M.B., M.R.C.S. (Eng.), D.O.M.S. (Lond.)

Injection

Transfusion bottle of 280 ml. Ampoules of 25 ml. in boxes of 6, 12 & 50. Transfusion bottles of 180 ml. along with a 20 ml. ampoule of 50% glucose solution. Ampoule of 25 ml. along with a 3 ml. ampoule of 50% glucose solution for each in boxes of 6, 12 & 50.

oral
Bottle of 280 ml.

protein hydrolysate for optimum protein nutrition

In malnutrition, anaemia, convalescence, pregnancy, lactation and all other conditions where protein therapy is indicated.

HYDROPROTEIN

BENGAL IMMUNITY CO., LTD.
IMMUNITY HOUSE CALCUTTA-13

for balanced amino acid and vitamin mineral therapy

TONOCARNINE FORTE

Each 100 ml. contains :

Amino acids and peptides from enzymic hydrolysis of milk protein, liver, yeast & vegetable proteins	15 g.
Vitamin B_1 (Thiamine Mononitrate)	10 mg.
Vitamin B_2	5 mg.
Vitamin B_6	3.5 mg.
Nicotinamide	66 mg.
Panthenol	10 mg.
Choline Dihydrogen Citrate	100 mg.
Folic Acid	5 mg.
Vitamin B_{12}	17.5 mcg.
Sodium glycerophosphate	600 mg.
Potassium glycerophosphate	900 mg.
Manganese glycerophosphate	33 mg.

in an aromatic palatable syrup base containing glycerine

PACKING
in bottles of 225 ml. & 450 ml.

BENGAL IMMUNITY CO., LTD.
153, DHARAMTALA STREET, CALCUTTA-13

Cover and Advertisement pages printed at the Venus Printing Works 52/7, Bipin Behari Ganguly Street, Calcutta - 12.